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ENVIRONMENTAL ASSESSMENT BOARD

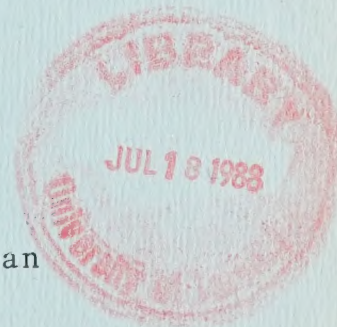
VOLUME: XXIV

DATE: Wednesday, July 6th, 1988

BEFORE: M.I. JEFFERY, Q.C., Chairman

E. MARTEL, Member

A. KOVEN, Member



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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council
(O.C. 2449/87) authorizing the
Environmental Assessment Board to
administer a funding program, in
connection with the environmental
assessment hearing with respect to the
Timber Management Class
Environmental Assessment, and to
distribute funds to qualified
participants.

Hearing held at the Ramada Prince Arthur
Hotel, 17 North Cumberland St., Thunder
Bay, Ontario, on Wednesday, July 6th, 1988,
commencing at 9:30 a.m.

VOLUME XXIV

BEFORE:

MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

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MR. B. CAMPBELL)	MINISTRY OF ENVIRONMENT
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APPEARANCES: (Cont'd)

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MR. P.D. McCUTCHEON	GEORGE NIXON

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APPEARANCES: (Cont'd)

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TOURISM ASSOCIATION

Witness:

JOHN EDWARD O'NEILL,

WITNESS A. AMERSON, Presided

Cross-Examination by Mr. Castiglioni

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Cross-Examination by Mr. Castrilli	4092

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112	Text entitled: Manual of Forest Management Plan Requirements for the Province of Ontario by MNR.	4143
113	Excerpt of text entitled: Timber Management: A Quantitative Approach, 1983.	4145
114	Interrogatory Question No. 1	4164
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1 ---Upon commencing at 9:30 a.m.

2 THE CHAIRMAN: Good morning, ladies and
3 gentlemen. Please be seated.

4 Just before you start, Mr. Castrilli, the
5 weather forecast calls for the temperature going in
6 excess of 30 degrees centigrade today so the Board is
7 going to issue an order that people will be properly
8 attired with or without jackets for the men, and some
9 ladies, so that you can take off your jackets at any
10 time you want, or keep them on, as you so choose.

11 And we will proceed on that basis, I
12 think, for at least the portion of the summer where the
13 heat in this room will become a problem. Very good.

14 Mr. Castrilli?

15 JOHN EDWARD OSBORN,
16 KENNETH A. ARMSON, Resumed

17 CONTINUED CROSS-EXAMINATION BY MR. CASTRILLI:

18 Q. Dr. Osborn, when we finished
19 yesterday we were speaking of the forest management
20 manual for 1980 and I understand you have a copy of it
21 with you and you can refer, if you like, to the pages
22 you have spoken of yesterday that describe the upper
23 and lower level limits.

24 DR. OSBORN: A. Yes. Within the forest
25 management manual as of 1980, at pages 45 and 46, are

1 arithmetic examples that speak to the upper and lower
2 limits that were applied to cutting in the MAD in that
3 manual.

4 Q. Can you also confirm for me - and I
5 believe you indicated this yesterday, but just to
6 clarify it for the record - no such limits now exist in
7 the 1986 manual; is that correct?

8 A. It was my supposition yesterday that
9 this was the case and in going through the manual and
10 in going through the Timber Management Planning Manual
11 of 1986--

12 Q. It is Exhibit 7 now?

13 A. Thank you. Going through that manual
14 and going through the Environmental Assessment Document
15 which is Document 4, there are no mathematical limits
16 in the comparable fashion to that manual of 1980.

17 Q. And just for the record, the upper
18 limit that existed in 1980 -- or in the 1980 manual,
19 would that have been 1.5:1?

20 A. No, it was a 110 per cent.

21 Q. A 110 per cent?

22 A. Correct.

23 Q. And the lower limit?

24 A. Was 90 per cent.

25 Q. 90. Thank you.

1 MRS. KOVEN: Excuse me, was that over the
2 five-year plan?

3 DR. OSBORN: Yes.

4 MR. CASTRILLI: Q. Now, your testimony
5 has been, Dr. Osborn, that the Ministry of Natural
6 Resources strives to provide a continuous and
7 predictable supply of wood by practicing sustained
8 yield management and that's reflected, for example, in
9 your paragraph No. 8 at page 20.

10 And I also understand from your evidence
11 that the most important application of the sustained
12 yield principle in timber management planning is the
13 establishment of a management objective?

14 DR. OSBORN: A. With the management
15 objective is a necessity, for any particular unit,
16 there needs to be a statement of that which one intends
17 to do on that particular unit.

18 Q. And would it be fair to say that the
19 objective should ensure that a flow of wood products
20 from the management unit is realized for a period of
21 time?

22 A. Yes.

23 Q. And should this objective be
24 quantifiable?

25 A. I believe so.

1 Q. And would it also be fair to say that
2 success in achieving this objective is measured by
3 comparing the planned and actual yields over time?

4 A. Yes.

5 Q. Is the Ministry in a position to show
6 by the management unit, species and working group what
7 the allowable cut and demand for each of the next five
8 years are, or will be?

9 A. Under the current Timber Management
10 Planning Manual for all the units in the province?

11 Q. Yes?

12 A. Okay. As was explained I think by
13 Mr. Armson yesterday, I believe, the existing Timber
14 Management Planning Manual's set of procedures, given
15 they cover a five-year planning period, have at this
16 point in time have not been employed or embraced all of
17 the units within the province, given that the manual
18 was only coming into effect relatively recently.

19 So in answer to your question, for all
20 the units in the province with that new manual, the new
21 manual doesn't cover all the units in the province at
22 this point in time.

23 Q. It covers approximately 70 per cent;
24 is that correct?

25 A. I do not know the percentage.

1 Q. Mr. Armson, can you advise?

2 MR. ARMSON: A. No, I can't tell you the
3 percentage.

4 Q. I believe it is in the Assessment
5 Document for June of '87, but without pursuing that
6 particular point, what data is available to indicate,
7 by each management unit, how the actual cut by working
8 group and species compares to the allowable cut for
9 each of the last ten years for both area and volume?

10 DR. OSBORN: A. Okay. This may vary
11 unit by unit because of under which manual it was
12 performed. Each and every unit, as far as I can
13 recall, irrespective of which kind of unit, therefore,
14 which manual it was under, would have had within that
15 plan a table of maximum allowable depletion or, to go
16 back ten years, what was formerly called the allowable
17 cut and that was in a different form of tables
18 certainly in the manual that was used for forest
19 management agreements and certainly in the manual that
20 preceded that for Crown land.

21 So the first half of your comparison was
22 stated in the table.

23 In the plan itself, that preceding the
24 existing Timber Management Planning Manual, in the plan
25 itself would not necessarily have been the actual, but

1 the records at the end of the plan, the records at the
2 end of the planning period would have been kept as to
3 what areas were cut and again, depending on timing,
4 were cut by working group, which would have been the
5 comparison planned allowable cut/actual allowable cut.

6 And the point to make, which was a little
7 bit different from your statement, that was typically
8 done working group by working group.

9 Q. All right. Not species by species?

10 A. No.

11 Q. Okay. Has this information been
12 compiled in readily accessible form. I don't believe
13 it has been produced as part of Panel 3. Is it going
14 to be produced as part of Panel 4 or a subsequent
15 panel?

16 A. It wasn't produced in Panel 3 and as
17 far as I can recall, it is not being -- at this point
18 in time it wasn't planned to be produced as part of
19 Panel 4, okay.

20 MR. CASTRILLI: Can I have some
21 indication of what the intention of the Ministry is
22 with respect to that information? Is it going to
23 produce it in some panel, some future panel?

24 MR. FREIDIN: We have no intention of
25 producing that type of information or that compilation

1 at this time.

2 MR. CASTRILLI: Q. Dr. Osborn, would you
3 agree with me that in the absence of the Board having
4 such information, neither the Board, the public nor the
5 parties will be able to determine how the Ministry has
6 met, or whether it can meet its objective of sustained
7 yield as expressed in the Environmental Assessment
8 Document?

9 DR. OSBORN: A. That set of simple
10 numbers alone would give a misleading set of
11 statistics, to answer the question you posed, merely
12 having allowable cut/actual cut or planned MAD/actual
13 depletion, without some explanation as to why the
14 numbers may differ. So just having the numbers alone I
15 personally think would be misleading.

16 In fact, one of the references that you
17 cite - and I can identify which one - has made such a
18 comparison for Ontario of actual cut/allowable cut with
19 some -- and if it is a flat statement of just the
20 numbers without the explanation as to why they differ
21 and what they mean, can lead to a false conclusion.

22 Q. You made reference to a document that
23 you thought I was referring to. Which document was
24 that?

25 A. On the list of documents you

1 produced, one of them was the FLC Report of 1978 and,
2 if I remember correctly within that report, and I
3 haven't read it recently, there was reference made to,
4 with regards to Ontario, actual cut/allowable cut and
5 the inference was the difference was out there to be
6 had.

7 Q. Let's go to Exhibit 4, the
8 Environmental Assessment Document, page 98.

9 We are talking about the second full
10 paragraph on that page which begins at line 11 and we
11 are, in particular -- I will read the whole paragraph:

12 "The most important application of
13 the sustained yield principle in timber
14 management planning was the establishment
15 of a management objective which ensures
16 that a flow of wood products from the
17 management unit is realized for a period
18 of time."

19 Just dropping down to line 16:

20 "This objective is quantifiable. One
21 specifies a desired and attainable
22 volumetric value to be realized in the
23 planning period over which it will be
24 attained."

25 And the last sentence in that paragraph

1 indicates that:

2 "Success in achieving this objective is
3 measured by comparing the planned and
4 actual yields over time."

5 Now, a simple reading of that last
6 sentence indicates that one can determine success
7 simply by comparing. There appear to be the numbers
8 expressed as planned yields versus the numbers
9 expressed as actual yields over time.

10 Your testimony now is that one cannot in
11 fact do that and that, in fact, that would be
12 misleading; is that correct?

13 A. Not entirely. This particular
14 document you just cited speaks to the process as of
15 today. In today's way of assessing and determining the
16 maximum allowable depletion in the front of the
17 planning period, the process is such that there is
18 complete agreement and mutual decision by all parties,
19 including public participation, as to what is the
20 planned value and in the course of the five-year
21 planning period the actual value is recorded and
22 compared to that.

23 Under that particular process, that
24 comparison is more relevant, more valid, more useful,
25 more in tune with the sentence you just quoted which

1 speaks to today's process than that which was practiced
2 five or 10 years ago when the MAD or the AAC was not
3 determined by a mutual agreement but by some
4 calculation procedure.

5 MR. MARTEL: I am having difficulty. If,
6 as you say the public is involved, are we talking
7 about, I presume, those people in a specific area
8 developing a plan, but the mass of the public, the
9 people who pay the freight, they are not involved, they
10 don't have compilation, they don't have explanation,
11 they don't have any -- I think Mr. Armson and I had a
12 little discussion about this some weeks ago on another
13 topic involving knowledge that the public should have
14 since they pay a substantial portion of regeneration
15 and now -- and also, I think, we discussed another item
16 of similar nature and yet we keep hearing that the
17 public is involved.

18 But the public really isn't involved
19 because the mass of the public, I am sure you agree,
20 doesn't get any information at all, has nothing to
21 gauge the success, the cost, or anything against.

22 I am just wondering how you think the
23 rest of the public should be involved in this process
24 of knowing what's going on, what they are paying for,
25 and so on?

1 DR. OSBORN: I understand your question
2 Mr. Martel, which is some enlargement of where counsel
3 was asking the question.

4 I was speaking specifically to the line
5 on page 98 speaking to success in achieving this
6 objective is measured by, and the straight arithmetic
7 comparison for today's process for whoever -- for
8 whoever, public not involved if you like, that straight
9 comparison, as of today, is a more relevant comparison
10 with no words added, if you like, because of the way
11 the MAD is selected in the first place than five or 10
12 years ago when the MAD was selected in a different form
13 and fashion and, in some cases, the actual "cut" was
14 different from the planned value in the beginning of
15 the period, and there is reasons for that and the
16 reasons need to be explained.

17 But the question was: Is why today can I
18 run with the statement that that simple mathematical
19 comparison is sufficient. And my statement is that
20 today that simple mathematical comparison is better,
21 but I still find MAD 100/actual 105, MAD 100/actual 92
22 is a flat -- if that is all you know, some what of half
23 the truth not the whole truth.

24 MR. MARTEL: What is MNR doing then at
25 the present time to make sure that the public does get

1 all of the facts they are entitled to have?

2 DR. OSBORN: With regards to this
3 particular issue of: What did we plan to do, what did
4 we actually do for each and every plan the
5 documentation describes - and, in fact, the
6 documentation partially was gone through by Mr. Armson
7 yesterday - what the planning value was, what the
8 actual value was and, in each and every management
9 plan, those data in today's process are in the plan
10 stated categorically in a table.

11 MR. MARTEL: That doesn't - I don't want
12 to be argumentative - but you are not suggesting that
13 that in fact advised the public unless somebody goes at
14 it one plan by one plan, to look through it all,
15 doesn't give the public a perspective of what's going
16 on in the forest.

17 MR. ARMSON: I wonder, Mr. Chairman, at
18 some risk I might perhaps present an analogy here. But
19 it seems to me, in a sense, what the issue is, as an
20 analogy, if one were to judge the success, the
21 effectiveness of the hospital system in Ontario by sort
22 of having an aggregate number of the number of sick
23 people that went in to all the hospitals, the costs of
24 maintaining the system and then the number of well
25 people that emerge from the hospital over a year, one

1 could say: Well, you are saying this is the amount of
2 money that it took to in fact take in sick people and
3 make them well and there is some measure in that.

4 In a sense, that's really I think some
5 what analogous to what we are talking about here. The
6 import I think of what Dr. Osborn has said in his
7 presentation is that one has to deal with the entities
8 on a specific basis. Therefore, it is not really very
9 possible for the public at large to gain -- from some
10 aggregate number, like so many thousands of hectares
11 cut, so many thousands -- a really valid picture and,
12 similarly, if you were looking at the effectiveness of
13 hospitals you would I think have to look at them with
14 respect to a) where they were, the type of hospital,
15 what particular kind of a role it played in the medical
16 system - obviously there are specialized hospitals.

17 And in that sense, you would want to look
18 at that -- obviously, overall, one would want to look
19 as a member of the public and a taxpayer, is the health
20 system or is the process there, is the system with
21 checks, balances and monitoring.

22 And I guess that's what I am saying is:
23 I think, in terms of the management in assessing the
24 effectiveness or success of timber management, you
25 really have to deal with the specific area of the

1 management unit, that's why we deal with it, but then
2 if you are looking at, in a sense, standing back as a
3 general member of the public - and I think this is your
4 point, Mr. Martelm - what are the measures, what are
5 the indeces that you can gain some confidence. And I
6 think that's really the issue here.

7 And I guess what I understand Dr. Osborn
8 saying and what I would be saying is, that the simple
9 arithmetic balance aggregated from the unit arne't the
10 indeces that we believe are the effect of that.

11 And I know that leads into --

12 MR. MARTEL: That's the natural question
13 then that follows: What are?

14 MR. ARMSON: Well, it seems to me, first
15 of all - this is, I presume, what the Board is very
16 much interested in - is the mechanism and process in
17 place whereby for any unit any member of the public can
18 find out what in fact is going on with that particular
19 entity and that is what the timber management planning
20 process and the opportunity for public to determine
21 what is going on is an important -- and have it
22 explained there.

23 That doesn't do very much for the public
24 who are a) not able to be there at that unit, but it is
25 an opportunity and I think that is an important aspect

1 of it.

2 The second level or other level I think
3 is equally important and I believe in Panel 2 there was
4 some discussion as to those items.

5 THE CHAIRMAN: Mr. Castrilli, continue.

6 MR. CASTRILLI: Mr. Chairman, in light of
7 the witness' comments I think it is time for my first
8 request for production for the day.

9 I would like to ask that either this
10 panel or the appropriate panel produce what I requested
11 earlier for the last five years and for the next five
12 years with whatever qualifying statements they want to
13 attach to it.

14 DR. OSBORN: May I ask Mr. Castrilli how
15 you expect us to produce the planned versus actual
16 comparison for the next five years?

17 MR. CASTRILLI: Just produce the planned
18 for the next five years, the planned and actual for the
19 last.

20 DR. OSBORN: Thank you.

21 THE CHAIRMAN: Mr. Freidin?

22 MR. CASTRILLI: If I could just correct
23 the record, for the last ten years, which is what my
24 original question was.

25 THE CHAIRMAN: I take it that you have

1 previously submitted a request for this production, or
2 is this the first time?

3 MR. CASTRILLI: I would have to check my
4 documentation. It really became evident, as I went
5 through the cross-examination, post-interrogatories,
6 that I was going to have to deal with this issue.

7 THE CHAIRMAN: You haven't submitted in
8 writing a request earlier in the proceeding or...

9 MR. CASTRILLI: I would have to check my
10 interrogatories to determine that. I don't believe I
11 did, but I will check.

12 THE CHAIRMAN: Very good thank you.

13 MR. FREIDIN: I would prefer to take that
14 under advisement because I want to talk to my client
15 about the practical difficulties or possibilities of
16 him doing what Mr. Castrilli has requested and I would
17 like to--

18 MR. CASTRILLI: Sorry.

19 MR. FREIDIN: --I would like to provide
20 my response with some information.

21 THE CHAIRMAN: Well, you can go back, Mr.
22 Freidin, and check with your clients as to what type of
23 practical problems you run into, but I think the Board
24 is inclined to order this production with, as Mr.
25 Castrilli has indicated, any qualifying statements you

1 want to make with them so that the numbers in
2 themselves, as Dr. Osborn has pointed out, which may
3 not tell the whole picture are suitably embellished
4 with the explanation if one is required.

5 MR. FREIDIN: If that in fact can be done
6 in a written form without...

7 THE CHAIRMAN: Well, if it cannot been
8 done in a written form, then produce the numbers and
9 then, if necessary, have a witness address the numbers.

10 MR. FREIDIN: For my information, could
11 the request be repeated so there is no question as to
12 what Mr. Castrilli or the Board is saying should be
13 produced.

14 MR. CASTRILLI: I can do that. I should
15 preface it by saying that I think it is fair and only
16 appropriate to limit it to the area of the undertaking
17 as opposed to the whole province.

18 MR. FREIDIN: Thank you.

19 MR. CASTRILLI: Firstly - I don't know if
20 that actually helps you or not, it might make it more
21 difficult.

22 Okay. Firstly, by management unit, and I
23 understand you do it by working group -- well, I have
24 asked for it by management unit, species and working
25 group and what the allowable cut--

1 MR. FREIDIN: Slower, please.

2 MR. CASTRILLI: --and demand for each of
3 the next five years would be for the area of the
4 undertaking.

5 THE CHAIRMAN: No, for the next five
6 years you are looking for --

7 MR. CASTRILLI: I am sorry, I am sorry.
8 For the next five years just what the demand is or what
9 the planned is, as you call it, And that is for the
10 area of the undertaking only.

11 MR. FREIDIN: For the next five years, in
12 terms of looking for that information, it will say what
13 is planned for the next five years, that means he is
14 requesting information which are the plans which have
15 been compared and approved this year for activities to
16 occur sort of in the next five?

17 MR. CASTRILLI: That will be fine, yes.

18 MR. FREIDIN: All right.

19 MR. CASTRILLI: It is on a management
20 unit by management unit basis though.

21 MR. FREIDIN: All right.

22 MR. CASTRILLI: Okay, and that is the
23 first request for production.

24 The second one is: Again, on a
25 management unit by management unit basis, by species

1 and working group, how the actual cut by working group
2 and species compares to the allowable cut or the MAD
3 for each of the last ten years for both area and volume
4 and that is, again, for the area of the undertaking.

5 MR. MARTEL: Could I ask another
6 question. In assessing over the last five or six years
7 your success rate, or the success rate -- the Ministry
8 has entered into, I think 70 per cent of the cutting by
9 FMAs, and how have you been able to gauge the success
10 or the failure of those FMAs?

11 What sort of compilation were you doing
12 to achieve that, to determine whether you had been
13 successful or not?

14 MR. ARMSON: In answer to that, Mr.
15 Martel, in the five-year reviews and considering that
16 the first five-year reviews of the first FMAs were
17 completed in 1985 it was, the period of time for which
18 the areas regenerated would normally then be considered
19 for free to grow - I think that term has been used -
20 would be normally five plus years, in fact within the
21 various documents it is not normal to expect them to be
22 free to grow, the species that we are dealing with, for
23 the most part from five years on.

24 Furthermore in the first five years of
25 the FMAs, the actual silvilcultural work was phased in

1 because the companies when they initiated it basically
2 had little or no expertise.

3 So there is, from the first five-year
4 review - and those are the only ones that have been
5 completed - there is not essentially a free to grow
6 success rate because of the time factor involved, only
7 the five years and, secondly, it was also related to
8 phase-in. The second five-year review will, of course,
9 pick up on that one.

10 So that really we are dealing with a
11 timing sequence here and it isn't possible to use free
12 to grow for treated areas, and I think that is the
13 intent of your question, there hasn't been the time
14 frame to identify those areas that have come in. Free
15 to grow areas that have come in during the first five
16 years have normally been areas that were treated by
17 the Ministry on the same area prior to the FMA.

18 Does that clarify for you?

19 MR. MARTEL: Well, I am not sure. I am
20 looking for -- I mean, if one looks at the document
21 which you presented, or someone presented on the
22 reviews, that said that all of the goals had in fact
23 been either achieved or overachieved, that was with
24 respect to regeneration and so on, and I am wondering
25 how you did that compilation, if you did it for cutting

1 as well as regeneration and accessing and so on?

2 MR. ARMSTRONG: Well, if I might. Those
3 would be from the records maintained by both the
4 company and the Ministry staff, particularly the
5 forester who we call the designated Crown
6 representative, and that would be in relation to areas
7 that were to be treated, harvested, site-prepared and
8 so on as you have indicated, were those areas done,
9 that would be documented.

10 Those are treatments of activity, not the
11 effectiveness of the activity which I think you were
12 getting at in terms of entering the so-called
13 production forest system. As I indicated, that would
14 come later.

15 THE CHAIRMAN: Mr. Castrilli?

16 MR. CASTRILLI: Thank you, Mr. Chairman.

17 THE CHAIRMAN: Do you have any idea, Mr.
18 Freidin, when this production might take place? I
19 mean, obviously it is going to take you some time to
20 get this together.

21 MR. FREIDIN: We may be looking at a
22 period of time of approximately four months.

23 THE CHAIRMAN: Four months, okay.

24 If you are going to provide a written
25 explanation you are at liberty to do so; if you wish to

1 call or recall any witnesses to give a verbal
2 explanation of those figures, you will also be
3 permitted to do so at that time.

4 And, of course, Mr. Castrilli you will be
5 entitled to cross-examine any witness called to explain
6 those figures at that time as well.

7 MR. CASTRILLI: Thank you, Mr. Chairman.

8 Q. Dr. Osborn, if we could move on then.

9 In your evidence you indicate that the flow of wood
10 from a given land area can vary based on a number of
11 factors that you refer to in paragraph 9 which appears
12 at page 20 of your evidence, and you refer there as
13 well to Document No. 5.

14 I would like to go over with you Document
15 5 which commences at page 70, actually -- yes,
16 officially it commences at page 69.

17 And example A is referred to on that
18 page, page 70, and it is a depiction of a forest as one
19 block and one age-class.

20 DR. OSBORN: A. Correct.

21 Q. And with respect to example B which
22 appears at page 71, that is an example of two
23 age-classes?

24 A. Correct.

25 Q. Examples C and D which are at pages

1 72 and 73 respectively are examples of 16 age-classes
2 and 80 age-classes?

3 A. Correct.

4 Q. Now, I understand if we look at
5 the --

6 MR. FREIDIN: I am just wondering if you
7 can give the page number, because it seemed to be one
8 of and it doesn't seem to be in sync with what I have
9 got.

10 MR. CASTRILLI: Commencing at page 70 is
11 example A through page 73 is example D.

12 MR. FREIDIN: Okay, thank you.

13 MR. CASTRILLI: Q. Now, Dr. Osborn, I
14 understand from the bar graph that appears at page 74
15 of Document 5 this graph relates to page 70, the
16 example A?

17 DR. OSBORN: A. Correct, 74 is the
18 volumetric implications of the area situation in page
19 70.

20 Q. And this graph at page 74 shows you
21 cutting or harvesting 100,000 cubic metres of wood from
22 example A once every 80 years?

23 A. Correct.

24 Q. So you are cutting 100 per cent of
25 the block once every 80 years and that is what is

1 depicted in the graph?

2 A. And all the trees were the same age,
3 and when they all reach age 80 on the entire area, the
4 entire area is cut.

5 Q. And with respect to page 75, which is
6 yet another bar graph, it relates to page 71 example B?

7 A. Yes, it is the volumetric
8 representation of the area situation on page 71.

9 Q. Thank you. And what the bar graph at
10 page 75 shows is that harvesting takes place, or is
11 taking place once every 40 years up to a level of
12 50,000 cubic metres?

13 A. At each time that half of the area is
14 cut.

15 Q. Right. So in other words harvesting
16 50 per cent of the block once every 40 years?

17 A. Correct.

18 Q. And if we look at page 76 of again
19 another bar graph and this relates to page 72, example
20 C?

21 A. Correct.

22 Q. And what we see there is cutting
23 taking place on this forest block once every five years
24 or a total of 16 times over 80 years?

25 A. Correct.

1 Q. And that would be to a level of 6,250
2 cubic metres per cut?

3 A. That's correct.

4 Q. Or approximately 6.25 per cent of the
5 forest block is cut every five years in example C on
6 page 76?

7 A. On page 76 you are cutting the 50
8 hectares out of the 800 hectares, whatever percentage
9 that works out to.

10 Q. Would you accept subject to
11 verification it is 6.25. And finally on page 77 the
12 bar graph there relates to example D and page 73?

13 A. Yes.

14 Q. And what page 77 shows is that
15 cutting is taking place every year on a different
16 sub-block of the larger forest block continuously for
17 an 80-year period?

18 A. Yes.

19 Q. And the cut at page 77 is to a level
20 of 1,250 cubic metres per year?

21 A. Correct.

22 Q. Or approximately 1.25 per cent?

23 A. Correct.

24 Q. Thank you.

25 Now, can I ask you to return to paragraph

1 9 which relates to this document. You say in the last
2 sentence in paragraph 9 on page 20 that all these
3 documents - really the graphs - that form a part of
4 Document 5 I just went over with you, depict even flow
5 of wood but at different time intervals?

6 A. Correct.

7 Q. Can the Board assume, therefore, that
8 example A is an even-flow cut?

9 A. A shows at 80 years intervals you get
10 100,000 cubic metres and at 160 years you get 100,000
11 cubic metres and at 240 years you get 100,000 cubic
12 metres. There is an even flow at 80-year intervals.

13 Q. Correct, an even-flow cut at
14 different time intervals?

15 A. Yes.

16 Q. Thank you. Now, I presume it is not
17 your testimony that we could run the forest at the
18 provincial level this way; that is, harvesting once
19 every 80 years as you show it in example A?

20 A. It is not my intent that any of these
21 diagrams necessarily represent how we manage the
22 province in totality. Each of these situations may or
23 may not occur on any of the management units.

24 Q. Well, is it your testimony that we
25 could run a management unit this way, harvesting once

1 every 80 years as you show in example A?

2 A. In parts of southern Ontario on
3 private land that situation in fact can occur.

4 Q. The area of the undertaking?

5 A. No, and it was not my intent in this
6 document to show examples that necessarily were spoken
7 to in the area of the undertaking, and my intent in
8 this series of diagrams was to show some implication of
9 age-class structure effect on both timing of and
10 magnitude of the even flow of wood from an area.

11 Q. So your testify is that we would not
12 see a 100 per cent cut once every 80 years on any
13 management unit in the area of the undertaking?

14 A. I don't know of a particular working
15 group within any of the hundred plus management units
16 in this province at the moment, I do not know of one
17 whose age-class structure leads one to think that will
18 be the way to manage it.

19 Q. Well, the impression that I'm left
20 with by your graphs is that the MNR definition of even
21 flow is that it can encompass cutting a hundred per
22 cent once every 80 years.

23 A. If the forest structure is that way
24 around and if the objectives of management are met with
25 that practice, that is still an example of sustained

1 yield, albeit a very rare situation and, as I say,
2 there are certainly instances on small holdings of
3 private land where this situation may well occur.

4 I am not in any shape or form advocating
5 that that is a common practice, I am merely
6 illustrating a principle.

7 Q. A principle that would have virtually
8 no application in any management unit within the area
9 of the undertaking?

10 A. No, a principle, as exemplified by A,
11 B, C, and D examples, show that depending upon the
12 age-class structure of the forest you may have a range
13 of ways in which to both the level and the timing of
14 the cut may vary.

15 Q. Well, we have come full circle to the
16 question I asked you yesterday regarding paragraphs 6
17 and paragraph 8.

18 Isn't your testimony that the Ministry of
19 Natural Resources means that even flow of wood can be
20 variable both with respect to time and amount?

21 A. Yes.

22 Q. How much variation from one year to
23 the next or over a ten-year period will the Ministry
24 allow?

25 A. We are back to the question you asked

1 at the end of yesterday that I spoke to earlier this
2 morning.

3 At this point in time, in the existing
4 manual and the existing Environmental Assessment
5 Document, No. 4 and No. 7, the agreed-upon value at the
6 front of the planning period is the value that is used
7 against which to check at the end of the period what
8 actually happened.

9 Now, the variation is zero. You plan a
10 hundred, you end up taking a hundred, with two caveats.
11 With two caveats that if, in the course of the
12 five-year planning period - which is the planning
13 period that is in the current way of doing business -
14 in the course of the five years you decide by year
15 three - and the you is now a collective you - that you
16 should take 110 or you should take 90 instead of the
17 100, and that is mutually agreed to, and I believe the
18 Environmental Assessment Document No. 4 describes the
19 process whereby this is conducted - and the exact
20 procedures of which I am not familiar with - if you all
21 mutually agree that the value now should be 90 or 1110,
22 it is that number against which the actuals at the end
23 of the five-year period are compared.

24 So from time zero planned to time five
25 actual, you have to recognize that there may have been

1 a mutually agreed variation in the course of the five
2 years.

3 If there was no variation, the planned
4 value at the front of the period should equal the
5 actual value at the end of the period, with the one
6 other caveat, because I said there were two: If in
7 year five, having cut that which one was allowed to cut
8 the day before the end of the period there was some
9 catastrophic fire, the total amount depleted may well
10 in actuality exceed the planned variable, the planned
11 value.

12 So in today's way of doing business you
13 have a planned value mutually agreed to and with no
14 other changes at the end of the period you have an
15 actual value.

16 THE CHAIRMAN: Dr. Osborn, are you saying
17 as well that if there are any variations by way of
18 agreement within that five-year period, you will still
19 be using those same upper limits of --

20 DR. OSBORN: No, sir.

21 THE CHAIRMAN: --upper limits and lower
22 limits, 110 and 90?

23 DR. OSBORN: No, sir, I am not.

24 THE CHAIRMAN: It could be anything?

25 DR. OSBORN: Yes, and that was really the

1 point being right in the first beginning of this
2 morning, those values in the 1980 manual have now
3 been -- I could say, lifted, superseded, replaced by
4 values that are now not defined but mutually agreed to
5 at years 2, 3, 4 in the 5-year process.

6 THE CHAIRMAN: And what criteria does the
7 Ministry use to agree to those kinds of variations?

8 DR. OSBORN: Okay. We are now into the
9 exact mechanics of how the Timber Management Planning
10 Manual is executed, sir, and at that point in time I
11 bow out because I have never done this.

12 MRS. KOVEN: Excuse me. If during the
13 second year - I am speaking to your first caveat - if
14 during the second year you agree that you should
15 increase the allowable cut, then does the planned
16 amount change?

17 DR. OSBORN: No the planned amount still
18 stays there.

19 MRS. KOVEN: It will never change after
20 it is pronounced at the beginning of the plan?

21 DR. OSBORN: You've got the time zero
22 value and it is recorded. And, as I understand it, in
23 year 1, 2 - I will use mutually agreed -- mutually
24 agreed that that value -- not that value should be
25 increased, but the level of depletion can be increased.

1 So at the end of the period, the actual
2 total amount depleted may now be a 110 as opposed to
3 the original 100, but there is the explanation that at
4 year two we will mutually agree that we will raise the
5 planned level, okay.

6 And this is why I come back to the need
7 for words. When you make these sorts of comparisons,
8 you need to recognize that that mutually agreed
9 decision was reached in year 2, year 3 or whenever.

10 Now, the actual mechanics of that taking
11 place, I am not familiar with.

12 MR. CASTRILLI: May I ask who will be
13 giving testimony on that? Would that be -- let me
14 guess, Panel 15?

15 MR. FREIDIN: You have got it.

16 THE CHAIRMAN: Good guess.

17 MR. CASTRILLI: I would not want to be a
18 witness in Panel 15.

19 Q. Dr. Osborn -- perhaps you will be.

20 Perhaps I could just confirm my
21 understanding of your last comment, you said there are
22 not defined limits, but there are mutually agreed to
23 limits.

24 Can I take that to mean that there are no
25 limits?

1 DR. OSBORN: A. You can take it to mean
2 what you like, sir, in all due respect. Arithmetically
3 there are no upper or lower state of that
4 arithmetically.

5 There is a mutually agreed consent and
6 recognize that the implications of changing it,
7 whatever the value of change is, is looked at in light
8 of not only the planning period, but the implications
9 that impact on the supply in ensuing periods.

10 Now, I have stated several times the
11 objective is twofold: short term/long term.

12 Any modification, any change to that
13 original agreed upon value is looked at in light of
14 what are the possible implications of said change down
15 the road.

16 Q. When you say mutually agreed to, who
17 are the parties to the mutual agreement?

18 A. Again, you are into the mechanics of
19 the process and all I could do is hazard a guess and,
20 under oath, that doesn't make sense.

21 I think it more appropriate to ask said
22 question in Panel 15. I do not know who the parties
23 are.

24 Q. Well, Mr. Armson, can you help us?
25 Let's talk about an FMA; I mean, who are the relevant

1 parties in an FMA, the Ministry and the company; are
2 they not.

3 MR. ARMSON: A. The process of planning
4 involves more than just the licensees or, in the case
5 of an agreement for forest, the forest manager
6 agreement holder. The planning process involves -- in
7 fact, there is a planning team on which there may be
8 sitting other representatives, or other programs from
9 the Ministry and there is, as you are aware,
10 occasions -- opportunities and occasions, in fact,
11 required for public opportunities to comment and ask
12 questions about what is going on in the planning
13 process.

14 There is also an amendment process and,
15 as with Dr. Osborn, I am not familiar with how that
16 works at the field level, but there is an amendment
17 process where there are considered to be significant
18 changes or amendments to the plan.

19 Q. Panel 15. Can I ask you, Dr. Osborn,
20 referring again to page 77, would you agree with me -
21 this is again on example, D on that page - that the
22 example exhibited on page 77 is more like sustained
23 yield on a management unit basis than indeed on a
24 provincial basis?

25 DR. OSBORN: A. The diagram on page 77

1 is a perfect example of a perfectly normal forest which
2 at this point in evidence, had not been spoken to.

3 The diagram on page 77 is not
4 necessarily, as was again shown later in my evidence, a
5 representation that occurs in Ontario, necessarily.
6 There is some units -- some working groups on some
7 management units that may closely approximate that
8 picture of area or volume, of age.

9 In fact, this is an area graph in essence
10 and those area histograms have been portrayed and
11 examples were shown of certain units and working
12 groups, none of which closely resemble this although
13 there are certain units that get close.

14 So when you say, is this not typical of
15 the province, the answer is no, it is not necessarily
16 typical of the province and it was never used for that
17 purpose.

18 Q. Well, this is typical, would you not
19 agree, in the sense that a cut occurs every year?

20 A. The model and the picture on 77
21 exemplified that under the conditions that were
22 described. You had a perfectly normal forest, you have
23 800 hectares and you have 10 hectares of every single
24 age-class, forgetting the other caveats of normal
25 forest for a moment, and therefore when the trees

1 appropriately reach age 80 they are all cut, in this
2 very simplistic illustration.

3 Q. Leaving aside the volumes which I
4 knowledge are identical for every cut for every year,
5 would you not agree that example D on page 77, which is
6 an example of the cut every year, is the better
7 approach for sustaining yield than, say, exhibit A,
8 which is a cut every eight years, leaving the volumes
9 aside?

10 A. Forgetting the volumes. Why did I
11 include A and D.

12 Q. That's right.

13 A. Because A and D are -- A particularly
14 is an extreme example illustrating the point of
15 sustained yield, cutting the same area at a discreet -
16 and we will forget the volumes - the same area at
17 discreet times.

18 The time in example A was every 80 years
19 because of the structure of the forest, the time in
20 example D was because of the structure of the forest.

21 And that was the point that was being
22 made, the structure of the forest has a bearing on how
23 much area and volume, therefore, one takes, one cuts,
24 one depletes, whatever the planning period.

25 And that was the point being made, that

1 age-class structure has a bearing on the amount. If
2 your age-class structure was that of page 77 - given
3 all the other caveats about equal growth and
4 replacement and what have you - then the cutting of the
5 equal area every year, as 77 shows, is the appropriate
6 way of doing business, again, recognizing that the
7 conditions remain constant and we're back to
8 yesterday's discussion of what happens if the rotation
9 should change from 80 to 60.

10 THE CHAIRMAN: Dr. Osborn, given the fact
11 that most management units contain forests of different
12 age-classes, is it not fair to say that in most
13 management units there is cutting every year because in
14 most management units some age-class will reach the
15 appropriate rotation--

16 DR. OSBORN: Very definitely.

17 THE CHAIRMAN: --age in which to cut in
18 that year only that portion?

19 DR. OSBORN: Very definitely, sir.

20 MR. CASTRILLI: Q. I think we are
21 actually saying the same thing, although I suspect at
22 two different levels.

23 Essentially Document 5 is demonstrating
24 how the Ministry's concept of sustained yield is
25 designed to be -- how available it can be, at least in

1 the Ministry's mind, recognizing you probably never
2 only cut once every 80 years?

3 DR. OSBORN: A. With all due respect,
4 Mr. Castrilli, the document as given in Document 5 is
5 not necessarily the Ministry's mind, it was my personal
6 effort to try and help - no that's not right - to try
7 to explain to the Board what some of the ideas behind
8 sustained yield were and what the implications of the
9 change in age-class structure were, in all due respect.

10 Q. In all due respect, was your graph
11 not reviewed by anyone else within the Ministry before
12 it was filed as part of this exhibit?

13 A. No, I didn't say that.

14 Q. That's what I took your comment to
15 mean, sorry. So could you restate what you mean then?

16 A. The graph was put together
17 personally, I put it together as a way of trying to
18 illustrate the ranges and the meaning of some of the
19 parts -- the word in the definition of sustained yield.

20 That document -- this document, my
21 evidence, the evidence, is the evidence of the Crown.
22 So, yes, it was reviewed by a variety of other people.

23 THE CHAIRMAN: What's the point, Mr.
24 Castrilli? Why are we spending time worrying about
25 the--

1 MR. CASTRILLI: How it relates?

2 THE CHAIRMAN: --the purpose for which
3 this was put in?

4 MR. CASTRILLI: It will very definitely
5 relate to the remainder of this cross-examination and
6 also to the evidence we will eventually be putting
7 forward with respect to the issue of how variable the
8 Ministry MAD calculations can come.

9 So it is highly relevant when Dr. Osborn,
10 as he already indicated, puts in what he has already
11 described as an extreme example of a massive cutover
12 once every 80 years.

13 THE CHAIRMAN: But he has already
14 explained the reason why he did that.

15 MR. CASTRILLI: I recognize that, but I
16 think it does relate very definitely to the remainder
17 of what we will be showing in not only in this
18 cross-examination but, ultimately, our case.

19 Now, I can demonstrate that by the next
20 few questions. I am not -- let me see, I only have
21 about another half page of questions on this point.

22 THE CHAIRMAN: Well, proceed for now, I
23 will see where you are going.

24 MR. CASTRILLI: Q. You have talked about
25 examples A and D. What about examples B and C, are they

1 more representative of sustained yield that one could
2 expect on a management unit by management unit basis;
3 those are respectively, a cut once every 40 years and
4 once every five years?

5 DR. OSBORN: A. The examples A to D show
6 the range, examples A, B and C from sort of a
7 provincial perspective, are comparatively rare.

8 As the Chairman just indicated, the
9 situation in D and something close to approximating
10 that, is that which is common in Ontario. There are
11 areas of age-classes out there that something is cut.

12 On most, and quite -- possibly all - and
13 I would have to -- we have got maybe 8 or 9 working
14 groups and 118 management units and I don't carry that
15 in my head, so to say it was done on all would perhaps
16 be unwise.

17 But the situation on page 77 is closer to
18 reality than A, B and C.

19 Q. Thank you. Paragraph 12 of your
20 evidence you refer there to Document 8 which is
21 actually -- in particular, page 96, the requirements of
22 the perfectly normal forest.

23 I ask you to turn to page 96. To begin
24 with, Item 2 on that page.

25 You say there that normal growing stock

1 volume on each of these areas of each age-class is one
2 of the requirements of the perfectly normal forest.

3 Do you see that?

4 A. Yes.

5 Q. Would you agree with me, Dr. Osborn,
6 that normal growing stock refers to the total volume of
7 the forest -- of the normal forest and not the volume
8 for each age-class?

9 A. It depends how you define what area
10 you are speaking to for normal growing stock. The word
11 normal growig stock volume on each of these areas of
12 each age-class was very carefully defined, indicating
13 that on the age-class that was 41, let's say, we would
14 expect on the volume on that area that was age 41 to be
15 that part of the triangle, the normal growing stock for
16 the forest triangle that, in fact, was given for
17 example on pages 95, or page 89.

18 So for the 41-year-olds you would expect
19 the volume to be the volume of the 41-year-olds; no
20 more, no less. And in the 80-year-old age-class you
21 would except the value to be the volume of the
22 80-year-olds.

23 Q. Don't standard text state that normal
24 growing stock is the total volume all stands?

25 A. Again, we are back to definitions and

1 the definition is given for those people who have a
2 definition of what is behind the statement.

3 The normal growing stock of the forest is
4 the total volume of the forest, given it was in a
5 normal arrangement which is, for example, the total
6 volume exemplified on page 89, for example, that
7 triangle that we spoke about, that normal growing stock
8 for the forest.

9 Q. I am just trying to understand your
10 statement at point No. 2 on page 96 which is described
11 as one of the requirements for the perfectly normal
12 forest. And I have asked you: Doesn't normal growing
13 stock refer to the total volume of the forest -- of the
14 normal forest and not the volume for each age-class as
15 you have stated it at Item 2?

16 So far I don't have an answer to that
17 question.

18 A. Mr. Castrilli, I could have used, on
19 page 96 under Item 2, the right growing stock, I could
20 have put a variety of English words in there.

21 I used the word normal, keeping with the
22 same concept, of the volume you would expect to have in
23 the 41-year age group -- you would expect to have in
24 the 41-year-old group of the normal forest triangle,
25 the volume that you would expect to find on the

1 41-year-olds, the component volume of the entire
2 triangle -- that the 41-year-olds represented that was
3 given on page 89.

4 I am hearing you ask why did I use the
5 word normal, and I used that to try and keep people in
6 the same wavelength that we are talking of this
7 triangle which is the normal -- on page 89, the normal
8 growing stock in the entire forest is represented by
9 the volume shown for that triangle.

10 Within that triangle each age-class needs
11 to have its rightful component value of that total.
12 The volume that is under that hypotenuse of that
13 triangle. For the sake of easier discussion, I used
14 the word normal for the 41-year-old's component of the
15 total.

16 Q. I am focusing in particular, Dr.
17 Osborn, on the last part of the Item 2 in which you say
18 "for each age-class"?

19 A. Correct, for the 41-year-old trees in
20 the total 80-year -- range of ages from 1 to 80, the
21 41-year-old age class' volume should be the value that,
22 if plotted on page 89, would reach the hypotenuse of
23 that right-angled triangle, the normal volume for the
24 41-year-olds.

25 Q. Maybe I can shorten this up a bit.

1 You have been given notice I want to produce a document
2 which is an excerpt from a book entitled: Forest
3 Management, this one by Meyer.

4 Are you familiar with that document?

5 A. No.

6 Q. You have been given notice of it;
7 have you not?

8 A. We were given notice of a text by
9 Meyer, but there are two well-known Meyers in the
10 United States Forest Service, sir, in the United
11 States.

12 Q. This is the only one for 1961; is
13 that right?

14 A. That I do not know, sir. Mr.
15 Meyer -- both Meyers both work, if I remember, for
16 universities and probably publish quite considerably.

17 THE CHAIRMAN: Exhibit 111.

18 ---EXHIBIT NO. 111: Excerpt of text entitled: Forest
19 Management by H. Arthur Meyer.

20 THE CHAIRMAN: Mr. Castrilli, ask your
21 questions based on this document and if Dr. Osborn
22 needs a few moments to familiarize himself with it, we
23 will give him to him.

24 MR. CASTRILLI: Very well, Mr. Chairman.
25 Just give me one moment to keep some housekeeping in

1 order.

2 Q. Page 49, at line 6 and 7 on that
3 page, Meyer there is talking about normal arrangement
4 and he indicates that with respect to the normal
5 forest, it is the total volume of all stands constituted
6 the normal growing stock.

7 So his definition is not the definition
8 you have ascribed as one of the requirements of the
9 normal forest at point No. 2.

10 So my question, Dr. Osborn, is: Isn't
11 Item 2 simply wrong?

12 DR. OSBORN: A. No.

13 Q. Would you agree with me that Meyer
14 disagrees with you?

15 A. No. Mr. Meyer states that if you
16 look at the picture on that page 49, the total volume
17 of all the age-classes constitutes the normal growing
18 stock.

19 Q. That is not what he says in the text;
20 is it? He says it is total volume of all stands.

21 A. Which is exactly what I said, sir.
22 The total volume of all the stands shown on that
23 figure, the total volume adds up to the normal growing
24 stock of - what is not stated in Mr. Meyer's text is,
25 of the forest, and this forest is made up of

1 age-classes from one to ten.

2 Q. Well, we will let the disagreement
3 stand and we will come back to it again, no doubt.

4 Itme 6 on your page 96.

5 THE CHAIRMAN: Just let me go back for
6 one second then and we will go on.

7 Are you saying, Dr. Osborn, effectively
8 that when you have the volume of any age-class within a
9 forest on a particular area, it will represent the same
10 volume of the total forest in that age-class?

11 DR. OSBORN: No, I don't think so.

12 I think the apparent difficulty in the
13 understanding is: If I come back to Item 2 on page 96,
14 instead of using normal growing stock volume I could
15 have said that the stands all were fully stocked.

16 There was a whole range of words I could
17 have used to try and describe that the volume of the
18 41-year-olds were completely; no more, no less than
19 what the volume of the 41-year-olds should be in the
20 normal forest triangle.

21 THE CHAIRMAN: All right, thank you.

22 If you take the definition of normal
23 forest, the normal -- the total normal forest, okay,
24 and whatever the volume is of any particular age-class
25 on any particular area within the total normal forest,

1 that percentage will be the same as what that age-class
2 would represent of the total, is that..?

3 DR. OSBORN: Yes, that is closer to where
4 I am coming from, yes.

5 MR. CASTRILLI: Q. Let's move on to Item
6 6. You state in Item 6 on page 96 that all age-classes
7 grow equally. This, you say, is another requirement of
8 the perfectly normal forest.

9 Do you see that? Do you have that
10 document?

11 DR. OSBORN: A. Yes, I have it and, yes,
12 that is part of the model of the normal forest.

13 Q. Would you agree with me that this
14 requirement, as you call it, of the normal forest, only
15 applies in cases where no yield tables are available?

16 A. No, the requirement -- the model of
17 the normal forest is made irrespective of yield tables.
18 The model of the normal forest is a conceptual idea, as
19 was explained.

20 Q. Isn't it true, Dr. Osborn, that when
21 yield tables are available or are used that all
22 age-classes are by definition assumed not to grow
23 equally, that is why the tables exist to tell us what
24 the different rates of growth are?

25 A. You used the word yield tables and I

1 hesitate because yield tables' basic intent is to
2 indicate what the yield might be at different intervals
3 of time.

4 Q. Isn't it true that the very use of
5 yield tables, by definition, means that all age-classes
6 are assumed not to grow equally, contrary to what you
7 indicate in Item no. 6?

8 A. No, yield tables will show, based
9 upon actual measurements, what the yield values are and
10 depending how the yield tables are constructed, you can
11 derive or actually have measured what the growth
12 increments between age-classes and, again as was shown,
13 in normal biological state of affairs, growth rates
14 vary according to the age of the stand, age of the
15 forest.

16 So the normal model and the normal
17 model's requirements for equal growth rates on every
18 age-class in that concept, has a piece of biological
19 inaccuracy as exemplified by the growth in yield
20 tables.

21 Q. Well, let's look at a yield table.
22 Isn't uneven age-class growth in fact what we see when
23 we look at, for example, Plonski's normal yield tables
24 which you have introduced a portion of in what is now
25 Exhibit 88?

1 A. Yes.

2 Q. Let's look at page 2 of Exhibit 88.

3 Sorry, do you have the page?

4 A. I have the page.

5 Q. Just look at the figures for volume
6 CAI and MAI. Would you agree with me that they show
7 that different growth rates are the rule for different
8 age-classes?

9 A. Very definitely.

10 Q. And aren't these figures used to
11 calculate normal growth or normal growing stock for the
12 normal forest; isn't that what they are about?

13 A. The volume aspects are, not the
14 yield -- not the growth rates, the volume values. The
15 yield values are used to calculate the actual growing
16 stock of the forest.

17 Q. Well, isn't it the case that if all
18 of the age-classes were growing equally then, for
19 example, with the CAI we would get the same increment
20 of growth per year or over a five-year period?

21 A. Absolutely.

22 Q. Well, let's look at the row for CAI
23 on page 2 in Exhibit 88. Isn't it obvious, as we go
24 down the page, that the growth rates are different and
25 that the age- classes are not growing equally?

1 A. Absolutely.

2 Q. So how is Item 6 on page 96
3 consistent with what we have just looked at in Exhibit
4 88?

5 A. Okay. We are into definitions again.
6 A normal forest and a normal stand - and this is
7 perhaps unfortunate in the forester's terminology - but
8 a normal stand is not the same use of the word normal
9 as in the normal forest.

10 Q. Sorry, have you completed your
11 answer?

12 A. Yes.

13 Q. Would you agree these figures in
14 Exhibit 88 are used to calculate normal growing stock
15 for the normal forest?

16 A. They are used to calculate the actual
17 growing stock of the actual forest.

18 Q. The table has nothing to do with the
19 normal forest? Aren't they called normal yield tables?

20 A. And, as I just explained, the word
21 normal as used in normal yield tables is not the same
22 use of the word normal as in normal forest.

23 THE CHAIRMAN: What does it mean,
24 typical?

25 DR. OSBORN: No, not quite that either,

1 sir.

2 The word normal in the terms of normal
3 yield tables, means fully stocked in forest
4 terminology.

5 Dr. Plonski's table measured stands that
6 had trees that that supposedly fully occupied the site
7 and, as such in forestry terminology, a stand that
8 fully occupies the site is deemed to be fully stocked,
9 and its fully stocked stands that are used as basic
10 input data.

11 And that is described at considerable
12 length in the introduction to Plonski's yield tables of
13 the meaning of this term and what data were collected
14 to go into the normal yield tables and perhaps it is
15 unfortunate, in forest terminology, that the foresters
16 will use the word normal in two different contexts.

17 And this is, hence, the difficulty we are
18 trying to explain, that normal yield tables and the
19 grounds were -- actually the illustration is
20 interesting because actual growth rates as exemplified
21 by the tables certainly are not equal, no discussion.
22 That is a fair comment.

23 However, the normal forest - the word
24 normal - is not the same use of the term,
25 unfortunately, as normal yield tables.

1 MR. CASTRILLI: Q. Just so I understand
2 what has gone on in the past. You would agree with me
3 that the Ministry of Natural Resources has calculated
4 the normal yield by using normal yield table values;
5 isn't that right?

6 DR. OSBORN: A. That's correct.

7 Q. And when doing so, it did not assume
8 that all age-classes were growing equally; is that
9 correct.

10 A. That is also correct.

11 Q. And that's exemplified, for example,
12 in the use of the Forest Management Planning Manual for
13 1977.

14 A. That's correct.

15 MR. CASTRILLI: Since we are going to be
16 referring to this document later, we may as well enter
17 it in evidence now. (handed)

18 THE CHAIRMAN: Exhibit 112.

19 ---EXHIBIT NO. 112: Text entitled: Manual of Forest
20 Management Plan Requirements for
the Province of Ontario by MNR.

21 MR. CASTRILLI: Q. Just following up on
22 the last point, Dr. Osborn. Look at page 19 of Exhibit
23 112 and just basically confirm what you just indicated.

24 If you look at the last full paragraph,
25 the last line and a half where it indicates that.

1 "...volume and annual current increment
2 are computed from the annual yield
3 tables."

4 We will be coming back to that, I just
5 wanted to confirm that now for the record.

6 DR. OSBORN: A. Yes.

7 Q. Thank you.

8 MR. CASTRILLI: Mr. Chairman, I still
9 have a long way to go in this segment of my
10 cross-examination. Perhaps this would be an
11 appropriate place to break.

12 THE CHAIRMAN: Very well. We will break
13 for 20 minutes.

14 ---Recess at 10:50 a.m.

15 ---Upon resuming at 11:15 a.m.

16 THE CHAIRMAN: Thank you, be seated.

17 MR. CASTRILLI: Q. Dr. Osborn, Item 7 on
18 page 96 of your evidence you state that only cutting
19 depletes the forest.

20 I am wondering just generally, would it
21 be fair to say that there is a more modern concept of
22 the normal forest than you have portrayed on page 96,
23 that of the fully regulated forest?

24 DR. OSBORN: A. I don't know of one.

25 Q. You are not familiar with the term

1 fully regulated forest?

2 A. I am aware of the expression, but
3 exactly what that means and how it may or may not
4 differ from the normal forest I am not certain.

5 Q. Well, can you confirm for me that the
6 fully regulated forest concept is similar to the normal
7 forest except that the fully stocked concept - or I
8 guess it is called normal stocking - is abandoned and
9 replaced by a more realistic yield of the forest?

10 A. As I stated, not knowing exactly what
11 is in a fully regulated forest I cannot confirm that it
12 is the same as a normal with the exception you stated.

13 Q. I am showing you an excerpt from
14 Jerome Clutter's Timber Management, a 1983 text in the
15 United States. And you had notice of this, as well.

16 THE CHAIRMAN: Exhibit 113.

17 ---EXHIBIT NO. 113: Excerpt of text entitled:
18 Timber Management: A Quantitative
Approach, 1983.

19 MR. CASTRILLI: Mr. Chairman this is
20 Exhibit 113?

21 THE CHAIRMAN: That's right.

22 MR. CASTRILLI: Q. I direct your
23 attention, Dr. Osborn, to page 239 of the exhibit which
24 is now Exhibit 113, and we are looking at paragraph
25 under the Heading 9.1, "The Fully Regulated Forest".

1 If we count down nine lines in that
2 paragraph to the sentence commencing, "More recent...",
3 the text reads:

4 "More recent discussions of forest
5 regulation...have abandoned the term
6 normal forest and instead consider fully
7 regulated forests. The concept of a
8 fully regulated forest in no way involves
9 any reference to normal stocking. In a
10 fully regulated forest, the yields
11 attainable at various ages are simply
12 assumed to be given by some known yield
13 function that is applicable for the type
14 and intensity of management being
15 applied."

16 Would you agree with me, and perhaps you
17 can simply confirm for me: Has the Ministry of Natural
18 Resources adopted the concept of the fully regulated
19 forest in its management plans?

20 DR. OSBORN: A. The Ministry of Natural
21 Resources fully recognizes that yields obtained from
22 the forest in actuality, in reality are not necessarily
23 those of fully stocked stands.

24 Q. So the answer -- sorry, were you
25 through with your answer?

1 A. Yes.

2 Q. So is the answer to my question, yes
3 or no?

4 A. Yes, that concept, that the fully
5 regulation forest exemplifies that particular idea that
6 the fully stocked stands may or any not be a reality,
7 is fully understood and, in fact, is done, perceived
8 demonstrated within Ontario, which is one reason why
9 the yields from year to year will in fact vary.

10 Q. So your testimony is the Ministry has
11 adopted the concept of a fully regulated forest?

12 A. Yes.

13 Q. Thank you.

14 THE CHAIRMAN: Although it may not call
15 it that; is that correct?

16 DR. OSBORN: Correct, sir.

17 MR. CASTRILLI: Q. Just to understand
18 this part of your testimony. Are there, in your
19 opinion, any changes in the normal forest concept that
20 can make it more realistic in practice, as I gather
21 from page 96 of your evidence you appear to be
22 emphasizing what you regard as the worst features of
23 the normal forest in order to justify a very variable
24 concept continuity of harvest.

25 So can you advise the Board what changes

1 in the concept normal forest, in your opinion, would
2 make it more realistic in practice?

3 A. Okay. Changing the concepts of a
4 normal forest, I don't see is a necessity;
5 understanding what happens in real life and how real
6 life may in fact be managed and the demonstration of
7 what real life is about in comparison to a norm is what
8 is important.

9 And so you need to understand the
10 concepts of a normal forest. There is no necessity to
11 change them, per se, as long as you recognize where the
12 actualities of life differ from that norm, which
13 essentially was what the fully regulated forest
14 concept, practice took.

15 It realized that in actuality in North
16 America fully stocked stands, particularly natural
17 stands and, subsequently, intensively managed stands
18 may give rise to stockings that were not the same as
19 "fully stocked". In fact, management may strive
20 deliberately to produce stands that are not fully
21 stocked.

22 As your particular reference indicates,
23 you need, therefore, to move into the quantification of
24 what that variety of management regimes may ultimately
25 be predicted to produce. And this was cited when we

1 described the red pine evidence and the red pine yield
2 tables which was an example within Ontario of where we
3 have walked towards that particular approach.

4 Q. Can I ask you: Would you agree that
5 there are favorable attributes associated with a
6 regular -- or, excuse me, a sustained regular harvest
7 from the forest?

8 A. There are some good points associated
9 with that idea, yes.

10 Q. Perhaps we can talk about some of
11 them. Could I ask you to refer to Exhibit 106, which
12 is Davis 1987, page 539.

13 Sorry, we are looking at -- you will see
14 there in the middle of the page a six-point statement
15 of why it is desirable to obtain a regular harvest from
16 the forest.

17 I am wondering if I can simply ask you to
18 read, either to yourself or aloud, the six points that
19 are listed there and then advise the Board whether you
20 agree with the six points.

21 A. I am in general agreement with the
22 six points under a stated set of circumstances.

23 Q. Perhaps you should, for the record,
24 state what the circumstances are so that we understand
25 when you are in agreement with the six points?

1 A. Okay. I agree with them, given that
2 the conditions of the market, the technology do not
3 change. And as was described in the evidence I gave,
4 should the rotation change, should the market change,
5 should technology change, there may be opportunity to
6 increase or decrease the amount that's cut.

7 So in answer to the first point, a yearly
8 cut of approximately equal volume, size, quality and
9 value, true, unless the conditions for that
10 circumstance change such that you could cut more or
11 less volume, value, different size and quality.

12 Now, this is real life, the market does
13 change. We even quoted Dr. Baskerville that the
14 determining -- quite clearly that markets drive what is
15 cut.

16 So in certain circumstances, one to six,
17 is very favourable, is a nice even flow if nothing
18 upsets the perfect state; no different in a way from
19 the 'N' state of affairs in our perfectly normal forest
20 either. The concept is still the same in the regulated
21 forest, as long as you realize that the circumstances
22 that are nice and quiet and peaceful at that time can,
23 in fact, be changed through a variety of circumstances.

24 For example, if you look at four, Item 4
25 says: Safety from fire, insects, disease and other

1 dangers is maintained because the forest is kept
2 growing, vigorous, and usually well distributed in
3 size, age and condition of the forest area. What
4 happens if your forest initially in fact is not in that
5 condition, what do you do to move it to that condition.

6 And in moving it to that condition -
7 which is desirable, true - you may or may not want to
8 modify and adjust - increase/decrease - what actually
9 gets cut year by year. So that you take the six points
10 which very valid, very relevant and you understand the
11 circumstances in which you apply those and all
12 modifications to those.

13 If you look at the bottom of your page,
14 539, just look at the last line:

15 "Even though this idealized final
16 structure is really attained, it serves
17 to focus our thinking."

18 And whatever the next pages are, which
19 aren't given.

20 So it is recognized that this is an ideal
21 to which you strive and you adjust your movements
22 towards that ideal of circumstances direct.

23 Q. So if I understand your testimony,
24 then, the structure of the forest which is desired in
25 the long term is, in fact, that of the normal forest;

1 is that correct?

2 A. Correct, at the day you make that
3 decision. And the structure of the normal forest
4 may -- the ideal forest - be it normal, be it fully
5 regulated, whatever that ideal is - as the bottom of
6 page 539 infers, that structure, that ideal may change
7 over time. So whatever you do, the forest must be kept
8 in as flexible a state as possible to achieve that end.
9 It's a moving target.

10 THE CHAIRMAN: Will your concept of a
11 normal forest ever change at all?

12 DR. OSBORN: I don't think the concept
13 per se changes, sir. The concept is still there, even
14 given that there are some obvious biological
15 misunderstandings in the concept, the concept is there
16 as a mental -- as much as - I think as even this
17 reference suggests - it is a mental concept. The
18 closer we get to understanding the realities, we may
19 choose a new model against which to model things. Our
20 ideal forest may change.

21 THE CHAIRMAN: That's what I mean, as you
22 go along in time you may change your mind as to what
23 the normal forest should be?

24 DR. OSBORN: Yes. I would change my mind
25 towards what the ideal forest should be, given the

1 normal was version 1 and through time, as I learn more,
2 we may get into version 2, version 3, version 4.

3 We are striving towards an ideal and the
4 ideal, unfortunately, is not a constant. This is
5 really why the move to fully regulated forest is a
6 recognition of some realities.

7 THE CHAIRMAN: Okay.

8 MR. CASTRILLI: Q. Paragraph 14 of your
9 evidence, page 21. Dr. Osborn, do you have the page?

10 DR. OSBORN: A. Yes, I do.

11 Q. Okay, thank you. You state in that
12 paragraph that where there is an overabundance of
13 mature age-classes, depletions should exceed growth, in
14 the fourth, fifth and sixth lines of that paragraph?

15 A. That's correct.

16 Q. Would it be fair to say that that
17 statement is not always true?

18 A. Oh, the statement is not always true
19 it depends on the circumstances, certainly. You have
20 to look at the impact of if you took the depletions
21 which did exceed growth, what were the implications
22 short term/long term, certainly. That is a generalized
23 statement.

24 Q. And would it it be fair to say that
25 it may be necessary to stretch out the old growth

1 forest until younger growing stock is old enough to be
2 cut?

3 A. That was exemplified in my evidence.

4 Q. So your answer is yes?

5 A. Yes, in some circumstances, yes, you
6 have to look at stretching out the old growth and see
7 whether you can store it on the stump if you have
8 age-class structures that don't let you have some
9 continuous production. That is an option.

10 Q. And stretching out the old growth
11 forest means not overdepleting it; is that correct?

12 A. That's correct.

13 That's not -- not quite. If I want to be
14 really precise, that means not cutting it. Whether you
15 like it or not, because it is old, nature may take it
16 away from you, it may be depleted by some other agency,
17 hence, the difficulty of what is called storing on the
18 stump.

19 Q. I had a yes and then I had it
20 qualified and now I am not sure of the meaning of the
21 answer to the original question.

22 As I stated it, I indicated -- or I
23 asked: You stretching out the old growth forest means
24 not overdepleting it, and your answer was yes?

25 A. And I am back to --

1 Q. Do you still want to qualify it?

2 A. I want to qualify, it means not
3 cutting because whether you want to stretch out the old
4 forest and not deplete it - whether you the manager
5 want to do that - you may not have control over events
6 that would deplete it whether you like it or not.

7 So I wanted to modify the word depletion
8 to indicate the manager has control over the cut, but
9 less control over some other factors that may cause the
10 depletion of the old forest, New Brunswick being the
11 case.

12 Q. Okay. So if I restated the question
13 to read: Stretching out the old growth forest means
14 not overcutting it, your answer would be yes, without
15 qualification?

16 A. Yes, that's right.

17 Q. Thank you. And I believe you
18 actually indicate this in paragraph 15 of your evidence
19 when you state at the last sentence in that paragraph:

20 "One could spread the harvest of the
21 older trees over a longer time period
22 even though they are at or past the age
23 of maturity.

24 Now, this is the same concept; is that
25 right?

1 A. Same concept as exemplified on pages
2 108 and 109.

3 Q. And I believe in your
4 evidence-in-chief - I forget how many days ago now,
5 perhaps it was even last week - when you referred to
6 the Canadian Council of Forest Ministers, they
7 essentially were taking the same view; that is, that
8 it may be necessary to stretch out the old growth
9 forest?

10 A. Well, this is a recognized fact
11 across the country.

12 MR. CASTRILLI: Mr. Chairman, just for
13 the record, that reference is page 118 of Document 14.
14 I won't read it into the record, it has already been
15 read into the record.

16 Q. Dr. Osborn, could you advise the
17 Board: Will the Ministry of Natural Resources' method
18 of calculating allowable cuts or what are now known as
19 MAD, depletes the old growth forest and not stretches
20 it out?

21 DR. OSBORN: A. At this point in time
22 the calculation of MAD and the adjustments to that
23 value permit looking at the implications short term and
24 long term for the licensee, its implications, and the
25 MAD may in fact be adjusted to enable the storing on

1 the stump, given the circumstances warrant it.

2 So let me go back and go back through
3 that slowly. The MAD, let's say, calculates a value of
4 100 hundred and at this point in time for this
5 five-year period industry says it requires 90.
6 However, an analysis will show that industry's
7 requirement in the second five-year period was 100 and
8 in the third five-year period was 110.

9 Now, it may be, therefore, that the MAD
10 in the first five-year period, although calculated as
11 100, the actual approved value which we will stack up
12 against in terms of what did they do is 90, recognizing
13 that the uncut trees - that difference between the
14 original 100 and the 90 - uncut trees, can be stored on
15 the stump.

16 So, yes, there is within the existing way
17 that allowable cuts and maximum allowable depletions
18 are now determined, the ability to consider whether or
19 not the stretching out of the old forest makes sense
20 depending upon the circumstances.

21 Q. My question was: Whether the current
22 MAD method depletes the old growth forest, not
23 stretches it out. Your answer wasn't in relation to
24 that question.

25 A. I am sorry, the MAD doesn't do

1 anything, sir.

2 Q. The method of calculating?

3 A. No, the method of calculation doesn't
4 deplete the forest. The method of calculation
5 demonstrates the number that could be depleted over the
6 planning period.

7 Q. Well, let's not -- if I have to
8 restate the question, I will restate the question. The
9 method permits one to analyse what level of cut would
10 be permissible?

11 A. Correct.

12 Q. So are not the current calculations
13 with respect to the old growth forest indicating an
14 accelerated cut in the old growth forest, which is not
15 the definition of stretching out but is one of
16 depletion?

17 A. The calculation procedure, as
18 described when I went through yield showing the average
19 age effect, shows that the average age of the forest
20 will cause there to be typically in the first iteration
21 of the calculation what was called an accelerated cut.

22 You don't stop there, you look at the
23 implications of that value for the five years and the
24 ensuing three five-year periods in the 20-year plan and
25 the long-term implications.

1 Now, this is a change, this is a change
2 from what happened in the 1980 manual where it was
3 calculated using the average age method - no ifs or
4 buts - and, in the learning process, certain
5 circumstances where they needed to modify that
6 procedure.

7 So today's procedure takes the
8 calculation, does the average age approach, looks at
9 the answer and looks as to whether or not that
10 satisfies the objectives of management. And if there
11 is a need to have a storing on the stump, that is
12 reflected in the recalculation, the reanalysis of the
13 MAD.

14 Q. I will put the question this way:
15 How does one stretch out the overmature forest if you
16 are accelerating the cut on it?

17 A. Oh, easily you adjust -- you change
18 the adjustment factor.

19 Q. Aren't those two concepts mutually
20 exclusive?

21 A. No, they have to be -- no, not
22 really. You have to look at one versus the other. The
23 typical desire -- let me back up.

24 Why did we do average age, because of the
25 idea if the forest was old, older than normal, older

1 than the average age, you would expect the very old
2 bulk of the trees to die if you didn't harvest them
3 first.

4 So the concept was if the forest is
5 excessively overmature and the trees are likely to die,
6 let's harvest those before in fact they die, let's use
7 that marketable material at this point in time.

8 We are back to contribution to the
9 economy of Ontario in all due respect. So the concept
10 was: Before they die let's harvest them. And if there
11 was a lot of them about to die and there was a market
12 - within the limits of whatever the management
13 objectives are short term/long term - let's harvest
14 them and, hence, the concept of accelerated cutting in
15 an overmature forest. And this is in several of the
16 texts actually you have given to me as references, the
17 idea of accelerated cutting.

18 But that thought needs to be modified in
19 light of reality and I believe Mr. Armson explained
20 that if -- if, in the immediate short term, there is no
21 market for that material, that accelerated MAD is
22 higher than is required, let's not put out that number
23 as if it is going to be the level that, let's say cut
24 for the moment to simplify the procedure, let's
25 recognize, particularly if there is a potential

1 shortfall down the road, and -- and the species in
2 question can be stored on the stump; i.e., it will not
3 die as far as we can best predict in the time horizon,
4 then we may lead to an effort to try and store those
5 trees on the stump.

6 So the original idea of: Hey, they are
7 old, hey they are going to die, is now looked at and we
8 have a little bit more understanding of: Yes, they are
9 old, will they die? And where there is a need to,
10 where there is a foreseeable market need to, we will
11 try and store those trees on the stump.

12 Q. So your testimony is the concept of
13 stretching out the overmature forest is consistent with
14 the view that one can accelerate the cut on it; is that
15 your testimony? Is that how you want the record to
16 read?

17 A. Both those two things can be
18 embraced, we can both store and still have an
19 accelerated cut at the same time, it depends on levels.
20 So both those two you just described are possible at
21 the same time.

22 Q. On the same stand from the same
23 management unit, the same place?

24 A. No, we are talking the same working
25 group, this is the level at which it is done. Let me

1 give you an arithmetic example.

2 You calculate the MAD, the MAD is a
3 hundred, this is an accelerated value. If you did it
4 without the acceleration factor the value is 80.

5 So accelerated MAD is 100. Now, because
6 of circumstances we in fact will have an accelerated
7 cut not at 100 but at 90 - that's a larger number than
8 the 80 - at the same time, because we are only cutting
9 the 90 as opposed to the 100, in so doing we are in
10 fact storing some of the trees on the stump for a
11 period of time, certainly beyond that planning period,
12 or attempting to.

13 You still have acceleration, you are
14 higher than the 80, but you've still got part of the
15 old forest being stretched out. So both can go on on
16 the same working group in a management unit at the same
17 time.

18 Q. That's fine, I have your evidence on
19 that point, then.

20 I ask you to turn to page 112. This is a
21 chart, part of Document 12 and the heading is: Normal
22 Forest Growing Stock Rotation Change from 80 to 60
23 Years.

24 Can I ask you to advise the Board if the
25 reference to volume at the top part of the page:

1 Volume (growing stock) is to total growing stock volume
2 or to volume per hectare?

3 A. In this example, where there is 1
4 hectare or 10 hectares of every single age-class in the
5 forest, the question is irrelevant, it is the same
6 thing. To simplify the matter, and this was given to
7 you as an interrogatory.

8 Q. Yes, we are going to be coming to
9 that too but I just wanted to be sure that I understood
10 your answer to my interrogatory before I file it.

11 A. To simplify it, as far as the
12 question, for the Board's concern at the moment, think
13 of it as total growing stock of all the hectares in the
14 forest. As I say...

15 Q. So for the purpose of the Board's
16 understanding of this chart, your testimony is that
17 they should regard it as total growing stock?

18 A. Correct.

19 Q. If we could refer to the
20 interrogatory, and file it.

21 A. It was Question No. 1 I believe.

22 Q. Yes, that's correct.

23 MR. CASTRILLI: Can I ask that that be
24 made the next exhibit.

25 THE CHAIRMAN: Exhibit 114.

1 MR. CASTRILLI: (handed)

2 THE CHAIRMAN: Thank you.

3 ---EXHIBIT NO. 114: Interrogatory Question No. 1
4 posed by CELA of MNR.

5 MR. CASTRILLI: Q. And your answer to
6 our interrogatory -- well, let me ask the question that
7 I asked earlier. We simply asked, as I just did now:

8 "Does the volume growing stock in the
9 figure on page 112 represent total
10 growing stock; i.e., total volume or
11 volume per hectare?"

12 In your answer you indicated:

13 "Normally the volume represents total
14 growing stock in this example, which
15 assumes an equal area of every age-class,
16 the volume represents both..." in large
17 caps, "...the TOTAL GROWING STOCK and
18 the VOLUME PER HECTARE."

19 And in your testimony just now you
20 indicated the Board should simply treat the answer as
21 one relating to total growing stock.

22 A. Yes, I made the same answer I just
23 gave you in the interrogatory. It can represent both,
24 depending where you are coming from, and I can
25 exemplify, it is easy to think of it as one rather than

1 both.

2 Q. And would you agree with me that --
3 on page 112 of Document 12, you are comparing two
4 different areas, a 60-hectare forest with an 80-hectare
5 forest?

6 A. No, I am comparing a forest that is
7 made up of 800 hectares, the 800-hectare example we
8 have been carrying through the evidence up until this
9 point in time.

10 Q. You are trying to demonstrate in this
11 chart, are you not, what happens when you reduce the
12 rotation age?

13 A. I am trying to demonstrate in this
14 chart that if you do change the rotation age from 80 to
15 60 on the ensuing page, page 113, what was some of the
16 options that you had to deal with in that situation.

17 Q. So the answer to my question is yes?

18 A. The answer is more elaborate than
19 your question.

20 Q. Or at least you are trying to
21 demonstrate what happens when you reduce the rotation
22 age?

23 A. Yes, sir.

24 Q. Can you advise the Board where in
25 document or where on page 112, your diagram, the other

1 20 hectares go?

2 A. Which are the -- I'm sorry don't
3 have 20 hectares, we have got an 800 hectare forest.
4 Which 20 hectares are we alluding to?

5 Q. The 20 hectares you have removed;
6 where are they on your chart?

7 A. I am not tracking, Mr. Castrilli,
8 where you are at all. I have, on this particular chart
9 on page 112, an 800-hectare forest and the volume on
10 that 800 hectares.

11 A normal forest, 80-year rotation. We
12 change the rotation to 60, as exemplified by the
13 diagram, and you have a rotation at age 60. The area
14 that is between ages 61-80, if that is what you are
15 alluding to, which happens to be 200 hectares in our
16 800-hectare forest, where do they go to? They are
17 still there.

18 Q. So where are they?

19 A. They are out there in the forest.

20 Q. Where are they on your chart?

21 A. Between bar 61 and 80.

22 Q. Do you have your overhead for that?

23 A. No, I am sorry I don't have my
24 overhead.

25 Q. The gap you are referring to then is

1 where the arrow points to rotation?

2 A. Oh, you are looking for why the gap
3 on the diagram?

4 Q. Well, I have asked the same question.
5 Where are -- you call it 200 hectares, where have they
6 gone on your chart?

7 A. They are still there, sir, from the
8 bar on the left-hand side of the No. 61, the left-hand
9 bar, up and to the right-hand side of the line that is
10 vertical above the 80.

11 Q. Let me just ask you generally with
12 respect to this chart, would you agree that if the
13 rotation is reduced for a given land base, the area per
14 age-class would be increased?

15 A. Would be...?

16 Q. Increased?

17 A. Well, it will be if you try and get a
18 normal forest back on that -- if you try and get a
19 normal forest back, and that forest now running under
20 a 60-year rotation, and that is the whole purpose of
21 the diagram to so show.

22 Q. So the answer to my question is yes?

23 A. Yes. I am cautious in the way you
24 asked the question, that is really why I am hesitating,
25 that is all.

1 Q. Would you like me to repeat the
2 question, or --

3 A. Yes, please, please. I am sorry.

4 Q. All right, sure. Would you agree
5 that if the rotation is reduced for a given land base
6 the area per age-class would be increased?

7 A. Yes, if it is on a 60-year
8 rotation -- yes, sorry.

9 Q. And would you agree with me that with
10 more area per age-class the volume per age-class would
11 be higher?

12 A. Total volume, yes.

13 Q. And on page 112 of your evidence you
14 are you talking about the same land area and you are
15 lowering the rotation age. So would you agree,
16 therefore, the area in each age-class would increase?

17 A. Yes.

18 Q. And, therefore, the volume in each
19 age class would be higher.

20 A. Yes, when the forest was looking like
21 a triangle on a 60-year base, which you don't have on
22 page 112.

23 Q. Look at page 113. You are discussing
24 there five options for cutting and for managing the
25 normal forest when rotation is changed from 80 years to

1 60 years.

2 Can you advise the Board, Dr. Osborn,
3 what the reason for changing the rotation age from 80
4 years to 60 years would be?

5 A. One simple example and I think it was
6 given in the testimony, was that the product now being
7 desired from the area could be produced at age 60 as
8 opposed to age 80, an illustration of what was called
9 the technical rotation.

10 Q. Just generally on that page, where
11 you are discussing implications - and this question is
12 really in relation to all five of the options you set
13 out on that page - would an additional implication
14 associated with all five options be reduced timber
15 size; that is, if you implemented a shorter rotation
16 age?

17 A. At the end of the 60 years or at the
18 beginning of?

19 Q. If it makes a difference, you can
20 answer it in relation to both.

21 A. Yes, it does make a difference,
22 really why I asked. Because in Option No. 4, for
23 example, in the beginning of the cutting, the cutting
24 80-year-old trees, same size as you have had before, so
25 there is no change in size in Option 4.

1 That is really why I ask, right at the
2 beginning of the period.

3 At the end of the 60 years under Option
4 5, for example, which is the one option -- and Option 1
5 but both potentially, lead to a normal forest on a
6 60-year rotation, all other things being equal, the
7 trees will be smaller in size.

8 Q. A further implication for all
9 options, would that be increased processing costs for
10 all five options on that page?

11 A. Industrial processing costs we are
12 talking of?

13 Q. All costs associated with harvesting
14 including processing, if you like -- sorry, including
15 industrial?

16 A. Typically, yes.

17 Q. And would you agree that a further
18 implication for all five options on that page would be
19 that because you are decreasing the rotation age, the
20 number of hectares available for harvest are increased?

21 A. Yes. That's exemplified actually in
22 Option 5, quite clearly. If you cut the 60th as
23 opposed to an 80th, the number is inherently larger.

24 Q. That is, when you lower the rotation
25 age, the allowable cut is increased; is that right?

1 A. That's correct.

2 Q. And the simple mathematical
3 expression for that would be total area divided by
4 rotation age?

5 A. Exactly.

6 Q. And would you confirm for me, Dr.
7 Osborn, that the allowable cut area, or MAD depends
8 upon the total area divided by rotation age?

9 A. Okay. We went through this in annual
10 yield and in the introductory presentation, I took area
11 divided by rotation the way I described.

12 Now, depending where you are going to,
13 subsequently I slowed there are some modifications to
14 that area divided by rotation, general principles still
15 right on.

16 Q. We will be getting to the
17 modifications, I suspect, on Monday.

18 A. Okay, that's fine.

19 Q. I would like to direct your attention
20 to Option No. 5 at the bottom of page 113. You are
21 referring there to a 160th cut from a mix of rotation
22 and I understand that should now read: "...and older
23 stands", as opposed to other?

24 A. Yes.

25 Q. And you indicate under the

1 implications for that option that there would be an:
2 "increased but controlled even market flow."

3 Do you see that in the middle of that --

4 A. Yes.

5 Q. --list of three options?

6 A. Yes.

7 Q. Would you agree with me, Dr. Osborn,
8 that the market flow would in fact not be even?

9 A. In the example that is shown the --

10 Q. Sorry, the example you are referring
11 to is...?

12 A. Sorry, in Option 5 on page 113, if we
13 were to execute that we would not have an exactly the
14 same arithmetic volume in this example, exactly the
15 same, because in the first year we would cut, depending
16 on the mix actually, the mix of ages that we actually
17 cut.

18 But if we were to start with the oldest,
19 for example, you would cut all of the 80th and a little
20 bit of the 79th and then the next year we will cut all
21 of the 79th that was left and a little bit of the 78th.

22 Because the volumes per unit area, as the
23 trees become younger, are not exactly the same, the
24 flow would not be exactly and volume would not be
25 exactly the same year-by-year over the whole 60 years,

1 if we cut starting from the oldest and walking down,
2 depending upon the mix of age-classes, whether or not
3 it would be an exactly equal amount each and every
4 year.

5 Q. You actually anticipated my next
6 question. If different ages-classes are being cut,
7 then different volumes per hectare would be cut; is
8 that right?

9 A. In this model, fully stocked stand,
10 everything else being equal, all the same site class,
11 et cetera, et cetera, yes.

12 Q. Thank you. And if you are cutting
13 different age-classes, you don't get an even volume
14 flow as you have indicated, you are just cutting the
15 same area, not the same volume; is that right?

16 A. Again, depending on the mix.

17 For example, if in the first year you cut
18 half of the 80 and half of the 60, and the next year
19 you cut half of the 79 and 61, without sitting down and
20 working out the arithmetic, whether I get the same
21 volume or not, I don't know

22 I would somewhat doubt that you get
23 exactly the same volume each and every year.

24 Q. So why then do you say you would get
25 an even market flow?

1 A. Because I was trying, in the
2 implication side, to write in as few words as I could
3 what the overall implications of the action were,
4 without a long elaborate treatise as what we have just
5 been through.

6 Q. The treatise has resulted in a
7 different answer; hasn't it?

8 A. I did say controlled equal market
9 flow, I said even.

10 Q. So the difference --

11 A. We are now getting into the semantics
12 of what equal and even mean.

13 Q. I wasn't going to, but you brought it
14 up.

15 THE CHAIRMAN: Well, why don't we move
16 on. I am not sure that the point is all that
17 important.

18 MR. CASTRILLI: Q. Page 114. This table
19 is also known as Document 13 respecting the effects of
20 silviculture stimulating forest growth.

21 If I understand the chart, perhaps you
22 can confirm this for me, Dr. Osborn, the chart is meant
23 to convey the impression that increased forest growth
24 is occurring, or as you call it, being stimulated
25 because of the effects of intensive silvicultural

1 initiatives; is that what stimulated means?

2 DR. OSBORN: A. Yes, silvicultural
3 actions of one way, shape, form or another have caused
4 the growth of the trees such that they are of a size at
5 age 50 that previously took 60 years to reach that same
6 size. That is the essence of the diagram.

7 Q. And -- sorry, were you done?

8 What do you base the curve on that
9 appears at page 114?

10 A. Are you asking what data?

11 Q. Yes?

12 A. There is no data behind that
13 particular curve. This is an inference that
14 silviculture - and I think again this sort of question
15 was asked in the interrogatories - silviculture
16 typically is practised, amongst other things, to cause
17 the growth rate of the trees to be greater than that
18 which is obtained naturally.

19 And, again, we sort of exemplified that,
20 for example, with the red pine natural yield table
21 versus the red pine moderately -- more planted and
22 moderately thinned.

23 Q. Is the new forest curve at page 114
24 which would be the B on the righthand chart--

25 A. Mm-hmm.

1 Q. --supposed to represent northern
2 Ontario.

3 A. It's not supposed to represent any
4 geographical part of Ontario. It is an exemplification
5 and hypothetical example to illustrate that by doing
6 silviculture you can in fact change the length of time
7 it takes to produce trees of a given size in a shorter
8 period of time, be it northern Ontario, be it southern
9 Ontario, be it Saskatchewan.

10 Q. Now, if we look at the curves
11 themselves - I am referring now to the ones on the
12 right-hand side of the page of page 114 - B represents
13 the or capital B represents the new forest and capital
14 A the old forest.

15 Can you advise the Board why these curves
16 drop off all of a sudden down to zero?

17 A. Certainly. When trees reach a
18 certain age, the stands tend to collapse, break up and
19 die.

20 Q. And would you agree with me that if
21 the forest really died out, the way you have depicted
22 it on page 114, there would be, and there would have
23 been, no forest?

24 A. These exemplify -- these are diagrams
25 on page 114 pertaining to how certain stands were

1 developed, not the entire forests, okay.

2 We have stands that, if they grew
3 naturally as - back to the red pine yield tables - the
4 red pine yield tables shows what may happen to a stand
5 and, naturally, the stand would grow up and would have
6 a rotation perhaps similar to that which is given as A
7 on the right-hand diagram on page 114.

8 We have even showed the fact that the
9 growth rates and the actual values will change for the
10 same age. We used the age 60, in fact, in the example
11 I believe.

12 So if you try and produce trees of the
13 same size, you now have - possibly through
14 silvicultural management - the ability to produce trees
15 of that same size in a shorter period of time.

16 Both stands, be they natural or planted,
17 eventually, if you left alone, will die.

18 Q. I just wanted to be clear on what the
19 meaning or what the identification of the chart should
20 be.

21 If I look down at the bottom of the page
22 where it says: "New and Original", I took new to mean
23 new forest.

24 Is it your testimony that it should be
25 new stand?

1 A. Yes.

2 Q. So it would be appropriate for me to
3 write in new stand for greater clarification of the
4 meaning of the chart?

5 A. Well, actually we are talking of
6 rotation. The word original was, in essence -- on page
7 114 on the left-hand side is an echo of a diagram that
8 was given on page 68.

9 And on page 68 we explained what the idea
10 of rotation was and the fact we selected it to achieve
11 our objectives.

12 So page 68 has a rotation that was
13 selected at a given point in time and the
14 identification on page 68 says that rotation was the
15 age at which trees were, "mature".

16 On page 114, we have in essence repeated
17 on the left-hand side diagrammatically what we have --
18 what is shown on page 68 to remind the reader that it
19 is a reference to: What are we talking about.

20 And on the right-hand diagram on page
21 114, it is a copy of the left-hand side overlain with
22 the rotation if you effect silviculture.

23 MR. MARTEL: Could I ask a question?

24 MR. CASTRILLI: Yes.

25 MR. MARTIN: New stand and new forest,

1 what is the difference? They are both new trees.

2 DR. OSBORN: Sorry.

3 MR. MARTEL: New stand, I think you were
4 asked if B was new, was that stand or forest, I think
5 was what Mr. Castrilli asked you.

6 MR. CASTRILLI: Yes.

7 DR. OSBORN: Yes, and my answer --

8 MR. MARTEL: I am simply asking the
9 question: What is the difference, they are both new
10 whether -- they are still trees, new trees.

11 DR. OSBORN: Yes, sir.

12 MR. MARTEL: I mean, never mind --

13 DR. OSBORN: The word rotation added
14 after the word original and the word new may perhaps
15 better exemplify what the question is about.

16 The word new and original related to
17 rotations. The original rotation was 80 years, the new
18 rotation is 60 years.

19 MR. CASTRILLI: Q. So you were not
20 referring on page 114 to the new forest and the old
21 forest?

22 DR. OSBORN: A. No.

23 Q. So in no way was this chart meant to.
24 be compared, for example -- or let me put the question
25 to you this way: Would not be appropriate to compare

1 page 114's chart to, say, Plonski's yield curves; in
2 other words, we are not comparing the same thing if we
3 do that.

4 Is that right?

5 A. No, not quite. I could have drawn
6 the diagram on page 114, both the diagram on the
7 left-hand side and the A on the right-hand side, I
8 could have drawn that actually using numbers taken out
9 of, for example, the red pine yield table that was an
10 exhibit, 64.

11 I could have actually diagrammed the real
12 values in that yield table on page 114 and I could have
13 also diagrammed on page 114 the example we used in
14 exhibit - 64, 84 - whatever the metric tables were that
15 showed the planted and thinned red pine.

16 Q. That was Exhibit 88.

17 A. Thank you. The red pine yield tables
18 that we used in metric are natural...

19 MR. FREIDIN: Are you looking for Exhibit
20 98, Dr. Osborn?

21 DR. OSBORN: Yes, I am.

22 Thank you very much.

23 MR. ARMSON: Here we are. (handed)

24 DR. OSBORN: Thank you.

25 Now, it is unfortunate on Exhibit 88 that

1 the particular document on red pine doesn't show tree
2 diameter.

3 Were it to do so, I can exemplify quite
4 quickly that for a given diameter I can reach that
5 diameter in 80 years naturally, 60 years, 50 years, 70
6 years a different number of years through silviculture.
7 And that was the point I was trying to make.

8 When we went through this comparison, we
9 used heights and we used volumes, in fact, we could use
10 average tree volume size, and we could indicate that we
11 can produce a tree of the same volume in a shorter
12 period of time in the table that is red pine planted.

13 MR. CASTRILLI: Q. In any event, the
14 curves on page 114 and any of the curves we see in
15 Exhibit 88 do not end up at zero?

16 Excuse me, the ones in Exhibit 88 never
17 end up at zero?

18 DR. OSBORN: A. No, sir, they only go to
19 a certain age and if you take any biological entity
20 long enough through time, ultimately it will die.

21 Q. And what was the time scale you had
22 in mind for exhibit -- excuse me, for page 114?

23 A. Okay. Exhibit 114 was absolutely a
24 diagrammatic representation of a principle.

25 Q. And just for clarification, you

1 indicated page 68 -- or 114 is an extension or an
2 elaboration based on the original page 68 in your
3 evidence?

4 A. Yes, 68 was what the, "original"
5 reference was.

6 Q. And when you are talking about trees
7 on that page, page 68, are you talking about a forest
8 and you are talking -- I think your testimony was you
9 are talking about a stand?

10 A. Yes, the diagram on page 68 could
11 describe the progression over time of a tree; it starts
12 small, gets bigger, folds up, dies. Or a stand, starts
13 small, gets bigger, collapses, dies.

14 Again diagram 68 has no numerics on it
15 that --

16 Q. Table is on page 68.

17 A. Sorry, page 68.

18 MR. CASTRILLI: Mr. Chairman, I am
19 wondering if this would be an appropriate place to
20 break for lunch.

21 I have a fairly large new area to go
22 into.

23 THE CHAIRMAN: Okay.

24 The Board will break until two o'clock.

25 ---Luncheon recess at 12:20 p.m.

1 ---Upon resuming at 2:00 p.m.

2 THE CHAIRMAN: Thank you, ladies and
3 gentlemen. Please be seated.

4 Who wants to fill in for Mr. Castrilli?

5 DR. OSBORN: Can I volunteer?

6 THE CHAIRMAN: I saw him a minute ago, he
7 is around.

8 MR. FREIDIN: He is around.

9 This is a return to the first couple of
10 days; isn't it?

11 THE CHAIRMAN: The case has been
12 dismissed, Mr. Castrilli.

13 MR. CASTRILLI: Does that mean we get to
14 start all over again?

15 THE CHAIRMAN: No. No, we will reinstate
16 it, you are reinstated.

17 MR. CASTRILLI: Q. Dr. Osborn, I just
18 wanted to tidy up a bit from the end of the morning.

19 I first refer you back to page 113, that
20 is the table respecting options for managing the normal
21 forest when the rotation age is changed from 80 to 60.

22 Can you advise the Board what fuels -- or
23 what would fuel a shorter rotation age?

24 DR. OSBORN: A. Did you say: What would
25 fuel it?

1 Q. Yes, or let me put it this way:
2 Would demand fuel a shorter rotation age?

3 A. Not necessarily. The example I gave
4 you before was a technological change.

5 Q. Well, would demand for more wood fuel
6 a shorter rotation age?

7 A. Not necessarily.

8 Q. Possibly?

9 A. Yes, possibly, sure.

10 Q. It is a factor?

11 A. Yes, sir.

12 Q. Thank you. And can you confirm for
13 me that the Ministry of Natural Resources is the one
14 who ultimately -- or is the agency that ultimately sets
15 the rotation age on a management unit by management
16 unit basis?

17 A. The Ministry of Natural Resources is
18 the ultimate approval authority.

19 Q. Can you advise the Board whether
20 there are -- if you know, what the process of agreement
21 is that might be necessary prior to the Ministry
22 setting a shorter rotation age on an FMA?

23 A. I don't know the exact procedures,
24 but it would be a discussion, negotiation, it will be
25 an understanding of what that means in terms of - and

1 we will come back to definitions of rotation - what
2 that means in terms of tree size, volume per hectare,
3 impact on pest and pathological interests, economic
4 values, accessibility issues.

5 The basis on which rotation is decided is
6 a rather lengthy series of technical considerations
7 short term and long term.

8 Q. If you know the answer to this
9 question I would appreciate the answer, if not, perhaps
10 you could advise -- or Mr. Freidin can advise which
11 panel will deal with it.

12 What is the role of the public in that
13 particular aspect of setting a shorter rotation age?

14 A. I don't really know, I am not party
15 to the discussion. However, as was I think identified
16 before, in the planning process there are several - the
17 exact number I am not sure in terms of timing -
18 opportunities for the public to comment upon that which
19 has been stated as they - I will use the word draft -
20 such that the public, however so defined have a chance
21 to comment upon in your example, rotation, as to
22 whether or not they agree, disagree with reasons as why
23 they may or may not think that number -- that rotation
24 value appropriate.

25 I am certainly aware that in the planning

1 process there is opportunity for public input, as far
2 as I understand, all facets of the draft plan.

3 Q. That's the draft timber management
4 plan for any particular management unit; is that
5 correct?

6 A. That's correct.

7 Q. So ultimately the decision is
8 discretionary with the Ministry of Natural Resources
9 under the Crown Timber Act; is that correct?

10 A. The Ministry certainly is the
11 ultimate authority who approves the plan.

12 Q. And the other bit of housecleaning I
13 wanted to deal with arising from matters before the
14 break, page 114.

15 Now, you have advised the Board that
16 what's shown on the right-hand side should be viewed in
17 terms of it being a stand and not forest; is that
18 correct?

19 A. That's correct.

20 Q. And now just referring to the A part
21 of that chart that refers to the original or old stand,
22 if we get some regeneration occurring on the old stand,
23 do you agree with me that we are never going to get to
24 zero or at least not get to zero as rapidly as that
25 chart suggests?

1 In other words, we are not going to have
2 a drop-off suddenly are we, fire aside?

3 A. Are you talking through natural
4 events? Because if you cut it, you certainly will
5 reach zero very quickly. If you are talking about
6 natural occurrences, other than fire?

7 Q. Other than fire and cutting.

8 A. And you are talking about natural
9 occurrences, natural events?

10 Q. Mm-hmm.

11 A. Just I think this summer a windstorm
12 went right through the northwestern part of this
13 province. The stands that were hit by that windstorm
14 went from whatever age they were to zero overnight.

15 Q. So your testimony is that A is
16 realistic?

17 A. My testimony is that you can go from
18 a stand of any age and have that stand killed,
19 flattened, back to age zero if you like, through a
20 variety of circumstances.

21 Some natural causes will cause that to
22 happen quickly, as in the case of windstorm almost
23 overnight, like the fire. Others will take place
24 slower, such that the stand will, tree by tree die,
25 collapse and in that collapse gradually there will be

1 less and less trees and to pursue the beginning of your
2 question, in thaintervening period some regeneration
3 may come in, which is where I think you were hinting
4 at.

5 Q. And the Plonski yield curve, does
6 that approximate what we see there?

7 A. The Plonski yield curve took the
8 trees to the, in the cases of all the species with
9 exception of spruce, up to I believe age a hundred,
10 indicating that over that period of time, as shown from
11 the data on the number of plots that were sampled, the
12 trees increased and increased up to a maximum value,
13 gross total volume, fully-stocked stands.

14 The normal yield table in Plonski
15 deliberately selected stands that were fully stocked,
16 that had a minimal amount of mortality. And this comes
17 back to your earlier comment about regulated forests
18 with actual yields and what are called empirical yield
19 tables.

20 And if I go into the explanation of
21 Plonski's yield tables in that text --

22 Q. Sorry, you are referring to Exhibit
23 88 or you are referring --

24 A. Referring to the Panel 3
25 evidence-in-chief and on page 192 -- on page 192 of the

1 evidence-in-chief, which is the introductory remarks in
2 the Plonski normal yield tables, and on page 192 in the
3 right-hand column, the first full paragraph - that's
4 about seven or eight lines down on the right-hand
5 side - reads:

6 "There are two kinds of yield tables:
7 empirical tables which are constructed
8 from stands of all degrees of stocking as
9 encountered in nature, thus representing
10 the average stocking at the time the
11 tables are made, and normal tables which
12 are based upon stands of optimum stocking
13 and reflect potential productive
14 capacity."

15 Plonski's normal yield tables are the
16 latter. They deliberately selected fully stocked
17 stands not exhibiting mortality, up to the age at which
18 they were measured deliberately.

19 They are not empirical tables, they do
20 reflect conditions of stand break-up, hence, the tables
21 and the graphs show an ever increasing volume up to the
22 age of the limit of the tables.

23 Now, even if you were to take those
24 stands beyond the age given in the tables, ultimately
25 the trees in those stands would die, the stands would

1 break up, and the stand would revert back towards zero.
2 Whether it gets back to zero or not depends, as you
3 were inferring, on whether there was any regeneration
4 coming in in the latter part of the life of that
5 existing stand.

6 The empirical yield tables, empirical
7 curves, that is curves showing actual volume per
8 hectare over age, particularly if they were showing a
9 net merchantable volume, will appear quite similar in
10 overall shape to those given on page 114.

11 Q. So your testimony is page 114 is
12 realistic even compared to Plonski?

13 A. Page 114 is a hypothetical
14 diagrammatic representation showing the impact of
15 silviculture on the change in rotation.

16 Q. Let's turn to paragraph 17. In that
17 paragraph, that's on page 22, you refer to continuity
18 of harvest in the next to last line and, again, this is
19 in the context of sustained yield -- in the context of
20 a sustained yield.

21 Would it be fair to say that the
22 continuity of harvest you are referring to there is
23 defined by you in paragraph 66 of your evidence when
24 you first discussed sustained yield?

25 A. The meaning behind the two statements

1 is the same, although the words differ.

2 Q. So the answer is yes?

3 A. Yes.

4 Q. Can you advise the Board what
5 continuity of harvest means with respect to volume
6 available by management unit and working group?

7 A. The idea of continuity of harvest,
8 the meaning behind the phrase is that there is a volume
9 coming off the unit, management unit, forest unit
10 today, the absolute level of which fulfills the
11 short-term level of objective of management.

12 The continuity of harvest expression
13 means that that will continue and typically it would be
14 available -- there will be a harvest available the next
15 year and the following year and the year after that, ad
16 infinitum.

17 The actual level and the magnitude of
18 that - and this is really why I made the statement
19 about the words differ - that's in paragraph 6 on page
20 19, infers that the absolute amount in any one year may
21 vary. The concept behind both statements is the same.

22 Q. And what is the range of variability
23 per year that the Ministry would expect in a volume of
24 timber supplied from a management unit?

25 A. The very easy answer is, I don't

1 know. I could go unit by unit, forest unit by forest
2 unit, and working group by working group and look at
3 what that range typically may or may not be.

4 We have talked about the area being the
5 same, the range in volume that is realized in that
6 five-year period, year, by year, by year may well vary
7 even if the area is the same for the reasons we
8 described -- you asked me about earlier, regards
9 stocking and the actual yields.

10 I don't know the magnitude, the numerical
11 volumes because it will vary from forest unit to forest
12 unit, planning period to planning period, management
13 unit to management unit.

14 Q. Okay. Well, your testimony is that
15 you don't know. Does MNR know?

16 A. The records will have that if it is
17 required. The records can -- okay. You asked earlier
18 for some records of what actually was being achieved.

19 Q. Yes.

20 A. If you really wanted to know on a
21 year by year basis you would have to track that on a
22 year by year basis to show what the volumes realized
23 year by year were, and there are a set of procedures
24 within Ontario called scaling returns, with
25 measurements procedures, that literally do measure all

1 the wood that comes off Crown land, and the amount of
2 wood that is put through that scaling procedures'
3 calculation, actual measurements, would indicate the
4 amount of volume coming off year, by year, by year and
5 those scaling returns are identified as to the cutting
6 approval, the area from which they come.

7 So on the unit basis, you can go and look
8 and see what that volume variability actually is.

9 Q. So your testimony is that MNR knows
10 but MNR would have to put it together?

11 A. I think you asked, I think it was --

12 Q. Is that part of the undertaking from
13 earlier?

14 A. Pardon?

15 Q. Is that part of your undertaking from
16 earlier?

17 A. No. You asked, I think, a question
18 before -- the party you represent asked a question
19 before to do with scaling returns in the sense of the
20 cutting approvals.

21 Now, the number of cutting approvals over
22 any particular year is very, very large. So the
23 records that speak in any one year to the actual volume
24 measured are incredibly voluminous.

25 So that is not the same record as you are

1 asking me for.

2 THE CHAIRMAN: Don't even think it, Mr.
3 Castrilli.

4 MR. CASTRILLI: How can I phrase this?

5 Q. When you say that MNR knows, how is
6 it MNR knows? In what form is it available for MNR to
7 know it?

8 DR. OSBORN: A. All right. Crown wood
9 in Ontario is measured when the wood is cut. The wood
10 is Crown wood is measured in Ontario according to a set
11 of scaling procedures, wood measurement procedures.

12 And, in fact, that measurement is rather
13 necessary, seeing as how the Crown charges an amount of
14 money for that wood which gives rise to the \$60-million
15 plus a year that we raise in revenues.

16 So the Crown directly or indirectly
17 measures that which comes off Crown land through those
18 scaling procedures.

19 In fact, the measurement, as I said,
20 serves as the basis for the levying of a dollar charge.

21 Q. I have asked you does MNR know and
22 your answer is it knows. How does anyone else find
23 out?

24 A. The actual volume that is cut each
25 and every year and scaled, measured, and the monies

1 raised from that are reported either in the annual
2 statistics and/or the annual report. One and/or both
3 those two documents, I am not quite sure which one, but
4 the scaling returns are described in the annual report.

5 Q. Would the scaling returns give you
6 volume levels?

7 A. Yes, sir.

8 Q. Now, in Document 14 which is at page
9 117, paragraph 4, the Canadian Council of Forestry
10 Ministers use the term continuity of supply, but they
11 do not define it and nor is it mentioned in the context
12 of variable volumes.

13 Is it your testimony that continuity of
14 yield or harvest or supply has the same meaning across
15 Canada?

16 A. Yes.

17 Q. And what does it mean in Ontario in
18 terms of your being able to quantify the continuity of
19 harvest or yield in the context of the variation you
20 referred to earlier in volume levels?

21 A. As mentioned before, as described in
22 the annual yield procedure you make a calculation of
23 the area that is in the maximum allowable depletion and
24 for that area you make an estimation of the volume
25 likely to be produced from that area.

1 And if the area is cut, the volume that
2 is realized from there is actually measured.

3 Now, in an annual basis, the actual
4 amount of area cut may vary and in any annual basis the
5 actual volume that is realized may vary year-by-year.

6 There is a continuity of supply, which is
7 what the term in page 117 states. So we are offering
8 our, we the Crown, we with that supply source, offering
9 up and it is being realized, it is being taken. The
10 actual amount, the actual level on an annual basis will
11 vary.

12 The continuity comes back to the idea
13 that it is there this year, next year.

14 Q. Well, let me ask the question again.
15 How much variation in volume is the Ministry prepared
16 to live with on a year-by-year basis?

17 A. Come back again to the same answer.
18 On an annual basis, on an area basis, the level is more
19 or less constant although the area may vary. The
20 actual volume that is realized from that area may vary
21 depending upon which stands, which site quality, which
22 species, what stocking. The actual amount from that
23 area, the actual volume may vary according to all those
24 factors.

25 The actual numerical value I cannot tell

1 you without looking at a certain specific area and, for
2 those stands we could estimate what the FRI says is out
3 there, and that will give you an indication, if we cut
4 the hundred hectares in the five-year period, what that
5 variation may be.

6 Q. And what is the range of variability
7 per year?

8 THE CHAIRMAN: Well, Mr. Castrilli, I
9 think with respect, he has already been through it.

10 He indicated, if I got your testimony
11 correct, Dr. Osborn, without looking at actual units
12 specifically you cannot even give a range?

13 DR. OSBORN: Correct, sir. The control
14 in Ontario is on an area basis, it is fully recognized
15 that by year-by-year the volume values may vary.

16 MR. CASTRILLI: Mr. Chairman, this
17 information is not merely curiosity on my part.
18 Sustained yield management involves knowing what
19 volumes are all about.

20 We have not heard any testimony, at least
21 from this witness - and I am not sure we are going to
22 hear it from any other witness or witness panel - as to
23 what in fact variation in volumes means in terms of
24 real numbers by the Ministry of Natural Resources.

25 It seems to me it is -- it will be

1 eventually extremely difficult for this Board to
2 understand what the Ministry of Natural Resources means
3 when it says sustained yield management and variability
4 in volumes unless, in fact, you know what the numbers
5 are, or at least what the range of numbers are.

6 And I would request that information be
7 provided.

8 THE CHAIRMAN: Mr. Freidin?

9 MR. FREIDIN: Mr. Chairman, it is the
10 Ministry's submission that once the Board has gone
11 through the planning process, including the tables
12 which are required to be filled in indicating the area
13 depleted by a licensee on the management unit - and you
14 have to look at reports which deal with five-year
15 aggregations of that under the new planning process -
16 that the Ministry will demonstrate that there is, in
17 fact, in place a process which has just been put in
18 place and which will be relied upon in this
19 Environmental Assessment, that will give the kind of
20 information in a form where it can be aggregated and
21 readily observed.

22 And, in my submission, when Dr. Osborn
23 has indicated this is dealt with on a management unit
24 by management unit basis, one of the purposes of going
25 through the planning process will demonstrate how, in

1 fact, from plan period to plan period consideration is
2 given to the variation in volume which may occur in the
3 short term and over the long term.

4 THE CHAIRMAN: As part of the process?

5 MR. FREIDIN: As part of the process. So
6 I think his interest in -- his interest and his
7 client's interest in the area is certainly justified.
8 The Ministry intends to address that specifically when
9 we deal with the planning process.

10 MR. CASTRILLI: All right. Which panel
11 are we speaking of?

12 MR. FREIDIN: Panel 15.

13 MR. CASTRILLI: So I thought. Now, he
14 said it is a process we are going to see in Panel 15,
15 he hasn't said it is numbers we are going to see, and I
16 would like Mr. Freidin to advise whether he means
17 numbers as well as process, because I think it is
18 extremely difficult to evaluate a process in the
19 abstract unless you can actually apply or hang some
20 numbers to it.

21 THE CHAIRMAN: Well, there may be other
22 criteria other than numbers that you may --

23 MR. CASTRILLI: I think one of them
24 should be numbers. I mean, we have had a lot of
25 hypothetical examples in this testimony and I don't see

1 and I don't hear Mr. Freidin saying that Panel 15 is
2 going to give us real, concrete on-the-ground numbers,
3 and I think that is extremely important ultimately for
4 the Board's ultimate determination.

5 THE CHAIRMAN: What is Panel 15 going to
6 give us in response to that submission? Is Panel 15
7 going to deal with numbers in any way?

8 MR. FREIDIN: Yes.

9 THE CHAIRMAN: They are.

10 MR. FREIDIN: There will be examples of
11 the calculations that I referred to and there will be
12 numbers in them.

13 MR. CASTRILLI: Examples are not what I
14 am talking about. I am talking about aggregate for the
15 province and aggregate on a management unit by
16 management unit basis, and I think that is what this
17 hearing is all about; it is not about hypotheticals ad
18 infinitum.

19 MR. FREIDIN: I want to be precise in
20 terms of what in fact is going to be produced in Panel
21 15, so could I just have a moment, please.

22 ---Discussion off the record

23 MR. FREIDIN: In Panel No. 15 we will not
24 be providing specific numbers for each and every
25 management unit in the province.

1 In Panel 15, keeping in mind this is a
2 Class Environmental Assessment, we will be producing or
3 explaining the process, explaining the method by which
4 you are supposed to keep track of the sorts of things
5 that Mr. Castrilli has mentioned, we will demonstrate
6 where the process has been used that the information is
7 being kept in that form and will allow the Ministry to
8 predict or have the volume information that I
9 understand Mr. Castrilli is asking for on a provincial
10 basis.

11 Panel No. 4 is dealing with, in one part
12 of the panel, the long-term wood supply. That is a
13 panel which will give evidence as to what the future
14 wood supply situation might be based on a number of
15 assumptions, and it is that evidence that the Ministry
16 will be relying upon to, in fact, give the Board and
17 the parties a sense of what the provincial picture
18 might look like over an extremely long period of time,
19 keeping in mind all the difficulties of predicting 50,
20 60, 70, 80 years in the future as indicated by Dr.
21 Osborn.

22 THE CHAIRMAN: Okay, having said that, is
23 not - perhaps you can answer this, Mr. Castrilli -- is
24 not Mr. Castrilli's request aimed at trying to
25 ascertain what the Ministry has done in the past, how

1 accurate they have been in the past in terms of
2 predicting supply and demand, effectively, in terms of
3 volume, and putting that before the Board as an
4 indication as to whether or not, regardless of what the
5 planning process is that you are putting before us, and
6 recognizing that what has happened in the past does not
7 necessarily fit this new planning process, but it goes
8 towards - without using the word in the usual sense -
9 the credibility of what has happened in the past in
10 terms of being able to predict and what we might expect
11 the Ministry, with its new planning model, to be able
12 to do in the future?

13 I mean, is that not, Mr. Castrilli, the
14 value, if any, of seeing past figures; realizing that
15 the planning model they are putting forward does not
16 necessarily fit what they did in the past?

17 MR. CASTRILLI: Yes.

18 THE CHAIRMAN: And if the Ministry
19 chooses not to do that, then the Board is left with
20 speculation as to how accurate the Ministry will be in
21 the light of the new planning process that they are
22 putting before us, having no benchmark against which to
23 measure it in terms of what happened in the past.

24 Is that a fair way of sort of expressing
25 what all this is about?

1 MR. CASTRILLI: Mm-hmm.

2 MR. FREIDIN: I understand exactly what
3 you just said, Mr. Chairman. I am just wondering if
4 you could ask Mr. Armson, he is on the next panel,
5 whether...

6 THE CHAIRMAN: Why don't we --

7 MR. FREIDIN: ...whether the
8 information -- I don't know. I don't want to say I am
9 undertaking here because I don't know what's involved
10 in the undertaking.

11 THE CHAIRMAN: All right. Why don't we
12 take a ten-minute break. You discuss this with the
13 panel, just this question, because when we come back we
14 can perhaps indicate which way the Board would like to
15 see this information handled.

16 MR. FREIDIN: I would appreciate that. I
17 have no idea what, you know, what a yes, we will
18 produce it, means.

19 THE CHAIRMAN: Well, we do not know
20 either, but why don't you discuss it and we will
21 discuss it amongst ourselves and then we will all come
22 back and have a discussion.

23 MR. FREIDIN: Could I just then have Mr.
24 Castrilli repeat, so I understand exactly what it is
25 that he is seeking.

1 MR. CASTRILLI: I am almost tempted to
2 say: Could it be read back from the record. The
3 questions began quite some time ago.

4 MR. FREIDIN: That is why I wanted to
5 hear it.

6 MR. CASTRILLI: Perhaps could I ask the
7 court reporter to do that.

8 THE COURT REPORTER: Yes.

9 MR. CASTRILLI: I should also note, by
10 the way, Mr. Chairman, that this is again a request
11 only for the area of the undertaking and not for the
12 whole province.

13 THE CHAIRMAN: Well, that excludes about
14 three square kilometres in the province.

15 MR. CASTRILLI: I was just trying to be
16 helpful.

17 THE COURT REPORTER: There was a lot of
18 discussion back and forth before this, but the ending
19 of Mr. Castrilli's request was:

20 "Examples are not what I am talking
21 about. I am talking about aggregate for
22 the province and aggregate on a
23 management unit by management unit basis,
24 and I think that is what this hearing is
25 all about; it is not about hypotheticals

1 ad infinitum."

2 THE CHAIRMAN: Do you want more?

3 MR. CASTRILLI: Well, If that is adequate
4 for Mr. -- I think we should probably put some time
5 frame around it to be fair to Mr. Freidin. I am
6 content to use the time frame we used for the earlier
7 undertaking.

8 THE CHAIRMAN: Ten years?

9 MR. FREIDIN: What was read back was the
10 aggregate for the province, the aggregate of...?

11 MR. CASTRILLI: And on a management unit
12 by management unit basis.

13 MR. FREIDIN: The aggregate of what?

14 MR. CASTRILLI: Volume figures.

15 THE CHAIRMAN: Well, volume you have got
16 as an aggregate of the province, do you not, in terms
17 of those provincial statistics or the annual reports--

18 MR. ARMSON: Yes, right.

19 THE CHAIRMAN: So that is a given, I
20 mean, that document can be handed over to you.

21 MR. CASTRILLI: On a management unit
22 basis.

23 THE CHAIRMAN: That is what you don't
24 have.

25 MR. FREIDIN: He wants the individual

1 numbers from the management units which were used to
2 produce a statistic which indicates the total volume.

3 THE CHAIRMAN: For the province.

4 MR. FREIDIN: In the province.

5 THE CHAIRMAN: That is what I understand.

6 MR. MARTEL: I understand.

7 MR. FREIDIN: Oh, for the area of the
8 undertaking.

9 All right, that is -- I will discuss that
10 with the panel.

11 THE CHAIRMAN: Okay. We will adjourn for
12 ten minutes.

13 ---Short recess.

14 ---Upon resuming at 3:00 p.m.

15 THE CHAIRMAN: Thank you. Be seated,
16 please.

17 Mr. Freidin?

18 MR. FREIDIN: Before I just deal with the
19 request, I don't believe I was very clear, or as clear
20 as I could have been in relation to Panel 15 and, in
21 particular, with reference to whether you are going to
22 see some actual numbers in Panel 15.

23 One of the things that we are going to be
24 doing in Panel 15 is the fact that we will present an
25 actual timber management plan. That plan will have the

1 actual numbers for that management unit in terms of the
2 past and show how those figures -- or, that information
3 was used to make decisions for that plan in the short
4 term and in the long term, and that plan will show what
5 the actual numbers were or are for the area anticipated
6 to be harvested and volumes from those areas.

7 So there will be an actual plan with
8 actual numbers for a management unit.

9 THE CHAIRMAN: So to get it straight,
10 your simulation of this, taking us through an actual
11 management plan, will be a twofold thing; it will take
12 the same area and do it under the rules that you used
13 in the past to show how that management plan would have
14 been developed in the past.

15 MR. FREIDIN: No.

16 THE CHAIRMAN: Okay.

17 MR. FREIDIN: The plan will be one which
18 has been done under the new process and you will see
19 how these numbers -- what the numbers are for that. We
20 are not going to give you an old plan and say: This is
21 how it would have been done under an old plan and
22 here's how it would be done under a new plan.

23 THE CHAIRMAN: Well, would that not be
24 helpful? Would that not be helpful to illustrate to
25 the Board how your new planning process has improved

1 over what was done in the past?

2 And, if I understand Mr. Castrilli's
3 submissions with respect to his request for this other
4 documentation, it is to basically have some kind of
5 benchmark as to how you operated in the past - and he
6 wants the actual numbers - so that when we are viewing
7 your plans for the future using the new management
8 process, we, the Board, and Mr. Castrilli for his
9 clients and every other party can have an indication of
10 where the deficiencies were, how they have been
11 rectified, if they have, and make submissions of their
12 own as to how it should be better improved.

13 And if you cannot provide that
14 information from the past, then I suppose an
15 alternative might be what I thought you were suggesting
16 and, that is, in Panel 15 leading us through a specific
17 area as the way you would have done it in the past and
18 then show us how you would do it under the new planning
19 mechanism.

20 MR. FREIDIN: Well, I hear you. I can't
21 say that we are going to change the format of
22 presentation just standing here now, but...

23 THE CHAIRMAN: Well, that might have a
24 bearing on whether we want some of the information from
25 the past, though.

1 MR. FREIDIN: Well, in terms of the past,
2 I can advise that we can produce the volume by species
3 on a management unit basis over the last ten years.

4 And that's what I understood the question
5 to be.

6 THE CHAIRMAN: So you can provide that
7 information?

8 MR. FREIDIN: We will provide that
9 information.

10 THE CHAIRMAN: Okay. And during what
11 time frame were you planning to do that?

12 MR. FREIDIN: Ten years, for the past ten
13 years.

14 THE CHAIRMAN: I know ten years, but
15 how -- you will give us the information in ten years as
16 well. We will not be here, I guarantee you that.

17 MR. FREIDIN: Six to eight weeks.

18 THE CHAIRMAN: Six to eight weeks. Very
19 well.

20 MR. CASTRILLI: Mr. Chairman, just so
21 I -- over the break I probably should have -- what I
22 was looking for, and I appreciate my friend's
23 comments -- and I take the Board back to my comments
24 when we originally were talking about page 98 of
25 Exhibit 4, we were talking about success in achieving

1 the objectives as measured by the planned and actual
2 yields over time, and my request at that time for
3 production asked for the information on an area and
4 volume basis.

5 And I thought that's what we had an
6 undertaking with respect to, and it was only when Dr.
7 Osborn said that's not what he understood it to be that
8 we have now split up the undertaking.

9 I think I already have this undertaking
10 from this morning. So what we really want then is
11 predicted and actual volumes too, and that's what I
12 understood was part and parcel of the undertaking given
13 this morning.

14 THE CHAIRMAN: Well, the predicted would
15 be contained in each of the plans, on a management unit
16 basis.

17 MR. CASTRILLI: Yes, that's right.

18 THE CHAIRMAN: The actual would be based
19 on your scaling data as to what was actually taken out;
20 is that correct?

21 DR. OSBORN: That's correct.

22 THE CHAIRMAN: And now we have it find
23 out from Mr. Freidin if that is what you are going to
24 produce.

25 MR. CASTRILLI: And this morning he said

1 it would take four months.

2 THE CHAIRMAN: Then ten years down to six
3 weeks.

4 MR. CASTRILLI: Down to six weeks. I
5 also understand this information is -- he has also
6 indicated this information is already in the annual
7 reports. So, I mean...

8 THE CHAIRMAN: Well, on a province-wide
9 basis.

10 MR. CASTRILLI: Well, where did the
11 numbers come from?

12 MR. FREIDIN: Can I get the transcript,
13 talk to my client over the evening and get back to him?

14 THE CHAIRMAN: Okay. Well, rather than
15 waste more time right now, Mr. Castrilli, we are not
16 going to get them today, in any event; you agree with
17 that?

18 MR. CASTRILLI: Yes.

19 THE CHAIRMAN: So let Mr. Freidin look at
20 the transcripts overnight, discuss it with this
21 clients, and if he has to discuss it with these
22 witnesses with respect to this issue only, you have
23 permission to do that.

24 MR. FREIDIN: Thank you.

25 THE CHAIRMAN: And then we will come back

1 tomorrow morning and settle this first thing in the
2 morning.

3 MR. CASTRILLI: I am content with that,
4 Mr. Chairman. Thank you.

5 THE CHAIRMAN: Thank you.

6 MR. CASTRILLI: Q. Dr. Osborn, while we
7 are on Document 14, I would just like to refer you to
8 page 122. The recommendation which appears in the
9 middle of the page -- or the first recommendation
10 appears in the middle of the page.

11 It is noted there by the Canadian Council
12 of Forestry Ministers:

13 "It is recommended that planning
14 processes be fostered that encourage the
15 development of specific and measurable
16 objectives for the management of defined
17 areas of land including timber and
18 non-timber values such as wildlife,
19 fisheries and recreation."

20 Do you agree with that recommendation?

21 DR. OSBORN: A. Yes, I do.

22 Q. Thank you. Now, paragraph 18 of your
23 evidence, it is at page 23.

24 At that page you refer to the concept of
25 how sustained yield can be applied in a practical

1 sense, and you refer the reader to Document 15 which is
2 a series of graphs that commence at page...

3 A. 124.

4 Q. Yes, that's right, through 126. And
5 I just want to confirm that your evidence with respect
6 to those graphs, or those graphs themselves, are again
7 theoretical; is that correct?

8 A. Correct.

9 Q. Notwithstanding that they are
10 theoretical, are they meant to be realistic?

11 A. Relatively, as was explained when I
12 went through them.

13 Q. Is there a panel that will be
14 producing actual curves and speak to the matters that
15 you described theoretically on pages 124 to 126?

16 A. With some aspects to this, yes, there
17 is.

18 Q. Would you like to advise the Board
19 which panel that would be?

20 A. Panel 4.

21 Q. Now, you say some aspects. Can you
22 advise the Board which aspects will be covered by Panel
23 4 in graph form and which will not?

24 A. Okay. On page 124, the form and
25 format of page 124, in terms of volume - and they are

1 the volume we were talking of with growing stock over
2 time and depletions over time and growth over time.

3 So those same axes will be presented in
4 Panel 4 over time and we will show, as we are today,
5 what are the estimates of predicting from today into
6 periods into the future with certain assumptions.

7 So the concept, the idea behind what was
8 in 124 particularly of taking today for those three
9 volumetric axes over time and projecting what it might
10 be under certain conditions is presented in Panel 4.

11 Q. I am not clear on what, that is on
12 page 124, in theoretical form, will not be in Panel 4
13 in actual form?

14 A. On page 124 virtually all that is on
15 124 is going to be projected in Panel 4 for particular
16 pieces of geography and I will speak to what they are
17 in a moment.

18 However, what takes place on 125 and 126
19 we are weren't going to that complete step explicitly
20 the way 125 and 126 chose.

21 What we will do is take the idea that's
22 in 124 of taking from today forward into time through a
23 variety of assumptions.

24 Q. Can you advise the Board whether
25 projections that will appear in Panel 4 will be by

1 species and working group?

2 A. I can advise them that they will be
3 by an aggregate of working groups and, in fact, for
4 example, we will project in the evidence in Panel 4 -
5 which has been released, in fact the graphs in Panel 4
6 are already in the public domain - those graphs show
7 that the aggregates are by softwoods and intolerant
8 hardwoods, which means poplar plus white birch species,
9 working groups.

10 Q. Thank you. Paragraph 28 and on that
11 page which goes -- or that paragraph which goes over to
12 page 26, you refer to FMA holders and, on page 26,
13 third party licensees conducting virtually all timber
14 management activities on FMA lands.

15 Do you see that?

16 A. Yes.

17 Q. Can you advise the Board, Dr. Osborn,
18 for the FMA areas that are within the area of the
19 undertaking, I presume they are declared surpluses; are
20 there not?

21 A. I believe on some FMAs there are,
22 yes.

23 Q. And a declared surplus is an amount
24 of wood the company does not intend to cut over a
25 five-year period; is that right?

1 A. No, if you went through very
2 carefully the tables that Mr. Armson presented, the
3 surplus was in fact the area which contained a volume
4 of wood.

5 So the actual mechanics of the tables, if
6 I remember correctly, were to do with the area on which
7 there was a volume of wood.

8 Q. The declared surplus is also a
9 volume; is it not?

10 A. Yes, it is.

11 Q. Thank you. And you are right, Mr.
12 Armson referred to declared surpluses in his evidence
13 and the FMA holder, I understand, is required to advise
14 the Ministry about the declared surplus in each timber
15 management plan; is that right?

16 A. Yes.

17 Q. And we saw that when we referred to
18 Table 4.16 of Exhibit --

19 A. Yes, of Mr. Armson going through the
20 procedures in the Timber Management Planning Manual.

21 Q. And that is of Exhibit 7?

22 A. Correct.

23 Q. Now, I understand that the declared
24 surplus is the MAD less the company's forecasted
25 five-year harvest.

1 Is it also true that this declared
2 surplus is available for direction to third party
3 operators?

4 A. If I understood the explanation from
5 Mr. Armson of Table 4.16 in Exhibit 7, the declared
6 surplus was in fact, in Table 4.16, the MAD minus the
7 reserves, minus the planned harvest, which gave rise to
8 an estimated surplus in Table 4.16.

9 And that, in turn, as was explained by
10 Mr. Armson, may or may not be adjusted with regards to
11 analyses regarding licensee wood supply.

12 Q. My question was: This surplus is
13 available for direction to third party operators; is it
14 not?

15 A. Yes.

16 THE CHAIRMAN: What do you mean by
17 direction to third party operators.

18 MR. CASTRILLI: Perhaps I can best
19 explain it by the next document I would like to refer
20 to.

21 Q. Exhibit 61, which is the Woodbridge
22 Reed Report, page 20 under the heading: Notes.

23 You see on that page, Dr. Osborn, under
24 Figure 3-12 this note is an FMA utilization review
25 prepared by these consultants on behalf of the Ministry

1 in their report which is dated November, 1987.

2 And under the notes it indicates:

3 "That the declared surplus is the MAD
4 less the company's forecasted five-year
5 harvest and that this surplus is
6 available for direction to third party
7 operators."

8 Now, can I presume that before a third
9 party can in fact cut on the declared surplus area, he
10 must obtain a licence from the Ministry of Natural
11 Resources?

12 DR. OSBORN: A. You are now into an area
13 in which I have little expertise in the licensing, but
14 I understand certainly to cut on any Crown land you
15 need a cutting approval and for that, I believe you
16 need a licence.

17 Q. And, Mr. Armson, can you confirm
18 that?

19 MR. ARMSON: A. That is also my
20 understanding.

21 Q. Has the Ministry been licensing the
22 declared surplus areas of FMA holder lands?

23 DR. OSBORN: A. I do not know.

24 Q. Mr. Armson?

25 MR. ARMSON: A. I can speak to one

1 specific FMA in which I was involved in the
2 negotiations with the FMA holder and my staff at that
3 time with the third parties. So, yes, it has happened
4 on one FMA area to my specific knowledge.

5 Q. Has the Ministry been systematically
6 licensing the declared surplus areas to third parties?

7 A. If I may answer that. On FMAs it is
8 my understanding that that was one of the results of
9 having declared surpluses on FMA area.

10 Q. So your testimony is that it is and
11 has been happening?

12 A. That is correct.

13 Q. Can you advise the Board what the
14 total volume of declared surplus in the area of the
15 undertaking on FMA lands has been since the amendments?

16 A. I don't know that figure, I don't
17 have it in my head.

18 Q. Who would --

19 A. Presumably Woodbridge Reed obtained
20 it from five-year reports and I assume that those are
21 the documents that would contain it.

22 Q. Well, as we will see, they don't know
23 either.

24 THE CHAIRMAN: And by that you mean total
25 of declared surplus areas or the volume of wood on

1 declared surplus areas?

2 MR. CASTRILLI: I think it amounts to the
3 same thing. If you are not licensing an area that is
4 declared as a declared surplus, you are not cutting any
5 volume from it.

6 Q. Who would know, Mr. Armson?

7 MR. ARMSON: A. I would imagine the
8 Timber Sales Branch and, in particular, the Management
9 Planning Section but certainly Timber Sales Branch
10 would have that information.

11 Q. And would they also have the
12 information respecting how much of declared surplus was
13 licensed to third parties?

14 A. I believe that information would be
15 available.

16 Q. Can I ask you to produce that
17 information.

18 MR. FREIDIN: Can I take that under
19 advisement, get back to you tomorrow and I will put to
20 my friend, through you Mr. Chairman, why wasn't that
21 information requested through the interrogatory
22 process?

23 MR. CASTRILLI: Mr. Chairman, there is a
24 simple answer for that. We wrote a six-page
25 interrogatory on Panel 3 and I think, with great

1 respect to my friend, we cannot be expected to ask
2 every single, conceivable, production-related question
3 in the form of an interrogatory, particularly when we
4 only had 30 days to produce the interrogatories.

5 So we do the best we can, but if he wants
6 a 50-page interrogatory, he is going to have to accept
7 it like this.

8 THE CHAIRMAN: Well, I am sure the
9 parties have done their best to put forward, in
10 interrogatory form, those questions for which they
11 realized they would be seeking answers.

12 I think, Mr. Freidin, under the
13 circumstances and particularly in view of the
14 complexity of this application, all of parties are
15 going to be requesting from time to time from each
16 other production of certain documents which they did
17 not realize they would require until they heard some
18 evidence or other documentation was filed.

19 Having said all that, we will expect you
20 to get back to us in the morning with whether or not
21 that information can be produced and, if not, why not.

22 MR. FREIDIN: Well, the first part I
23 think I do have down, what the total declared surplus
24 on FMA lands were.

25 MR. CASTRILLI: Total volume of declared

1 surplus in the area of the undertaking is the first
2 one, and how much of that declared surplus was licensed
3 to third parties.

4 And the period we are talking about is
5 since the amendments; I guess that is roughly 1980 to
6 date, on a year-by-year basis.

7 MR. ARMSON: If I might, Mr. Chairman,
8 that Table 4.16, the declared surplus, the numeric
9 there is in hectares; that is the number, it would be
10 in hectares.

11 I believe Mr. Castrilli said volume, and
12 the number would be in hectares.

13 MR. CASTRILLI: Well, in whatever form it
14 exists.

15 MR. FREIDIN: And this is for FMAs?

16 MR. CASTRILLI: Yes.

17 THE CHAIRMAN: Within the area of the
18 undertaking?

19 MR. CASTRILLI: Yes.

20 Mr. Chairman, I have other questions in
21 relation to this. I am wondering if it might be more
22 appropriate to hold them down until tomorrow morning
23 when I hear from Mr. Freidin and, if necessary, come
24 back to them and, with your permission, I would like to
25 do that.

1 THE CHAIRMAN: Very well.

2 MR. CASTRILLI: Q. Dr. Osborn, at
3 paragraph 32 of your evidence, page 26, you indicate
4 that the FRI is an estimate of the forest.

5 Can you advise the Board as to the type
6 and size of forest you are estimating? Do you mean on
7 a stand basis, a township basis, management unit,,
8 district region, or at the province -- at the
9 provincial level?

10 DR. OSBORN: A. All, all those you
11 mentioned.

12 Q. All of those. Would you agree with
13 me that it is not credible to expect to estimate
14 characteristics of a single stand with an area of the
15 order of 200 hectares using a system designed to
16 provide an average representation of an area in the
17 order of 200,000 hectares?

18 A. As quoted by Dr. Baskerville.

19 Q. Do you agree with it?

20 A. I do and my evidence in describing
21 the forest resource inventory so demonstrated.

22 Q. Mr. Armson, you have previously
23 testified I believe that the FRI is suitable for use on
24 a provincial scale and that it was never intended to be
25 used at the stand level; is that correct?

1 MR. ARMSON: A. That's correct.

2 Q. Dean Baskerville's Report indicates
3 that frequently it is used at the stand level; is that
4 correct?

5 A. Yes. I would say misused.

6 MR. CASTRILLI: Now, Mr. Chairman, for
7 the record that is at page 41 of Exhibit 16, the last
8 paragraph on that page.

9 Q. Paragraph 34 of your evidence, Dr.
10 Osborn, you testify that some of the methods for
11 reporting and displaying information have changed since
12 the forest inventory procedure document of 1978.

13 I would like to introduce, if I could,
14 your response to our interrogatory. (handed)

15 MR. CASTRILLI: Mr. Chairman, I would
16 like to make this the next exhibit.

17 THE CHAIRMAN: Exhibit 115.

18 ---EXHIBIT NO. 115: MNR response to CELA's
19 Interrogatory No. 2.

20 MR. CASTRILLI: Q. Dr. Osborn, on what
21 is now Exhibit 115 we asked three questions and the
22 first one we asked was:

23 "Have information-gathering methods
24 changed for FRI's since the 1978 "Forest
25 Inventory Procedure For Ontario," and we

1 asked for any details.

2 Your response, which appears at the
3 bottom of that page under Item 1, is that:

4 "Information gathering is still done by a
5 combination of aerial photography,
6 sample plot data and reviews of previous
7 records."

8 And out of that question which asked have
9 the methods changed, can I presume that your answer
10 means that the information-gathering methods have not
11 changed?

12 DR. OSBORN: A. That is what you asked
13 and that is what was answered.

14 Q. Thank you. Now, the second part of
15 the interrogatory is a question which asked:

16 "Does the FRI continue to overestimate
17 operationl cruise volumes by 30 per cent
18 as noted by K. Armson from..." his
19 witness statement, or: "...Panel No. II, page 160."

20 Now, as I recall Mr. Armson's testimony,
21 I believe he indicated that he -- that that was the
22 conclusion of the author of the study that he was
23 citing and not necessarily Mr. Armson's testimony.

24 Do you recall that evidence, Mr. Armson?

25 MR. ARMSON: A. Yes, I do.

1 Q. Now, the study that is referred to,
2 or one of the studies that is referred to by Mr. Armson
3 in that report, in Panel Evidence No. II, was done by a
4 Dr. F. Raymond, and I understand that -- well, you have
5 quoted from the first paragraph of it, but I would like
6 to actually introduce the entire report at this time.

7 MR. CASTRILLI: Mr. Chairman, I ask this
8 be made the next exhibit.

9 THE CHAIRMAN: Exhibit 116.

10 ---EXHIBIT NO. 116: Report entitled: Inventory-Based
11 Forest Management -- A preliminary
12 comparison of FRI and
operational-cruise volumes, by Dr.
F. Raymond.

13 MR. CASTRILLI: (handed)

14 THE CHAIRMAN: Thank you.

15 Mr. Castrilli, is Dr. Raymond from the
16 Policy Research Branch of the Ministry of Natural
17 Resources?

18 MR. FREIDIN: He is no longer employed by
19 the Ministry. I think...

20 THE CHAIRMAN: Is that where he was when
21 he wrote this?

22 DR. OSBORN: He was in that Branch, sir,
23 in 1974 when he was the author of this report.

24 THE CHAIRMAN: Thank you.

25 MR. CASTRILLI: Q. Now, just beginning

1 with the response in the interrogatory. You say Mr.
2 Armson was referring to a paper by Raymond, Dr. Raymond
3 reported for the areas he sampled and based upon data
4 collected in the late 1960s and early 70s.

5 His findings were what you quote, and I
6 will just read the quote into the record:

7 "The preliminary finding is that if
8 operational-cruise volumes are correct
9 then forest resources inventory volumes
10 overestimate the standing volume by about
11 one-third when taken over all the..."
12 areas cruised "...acres cruised and all the working
13 groups."

14 And then you go on to - and I presume
15 this is -- Dr. Osborn, this is you speaking at the
16 remainder of the interrogatory and not Mr. Armson?

17 DR. OSBORN: A. I wrote the answer to
18 the interrogatory.

19 Q. Okay. And then you go on to state:
20 "Without carefully designed and
21 controlled experiments, it is not
22 possible to confirm or deny the quotation
23 with today's process..."

24 And you say:

25 "There is no single relation between

1 single FRI volumes and operational-cruise
2 volumes."

3 To your knowledge, Dr. Osborn, would Dr.
4 Raymond's assessment have been contradicted by any
5 other assessments you are aware of in that time period?

6 A. Did you say could it have been?

7 Q. No, was it?

8 A. Well, since Dr. Raymond's report was
9 produced in '74, a recent report, Exhibit 93, which is
10 the Rosehart Report, contained I think five references
11 to somewhat similar comparisons to that which were
12 undertaken by Dr. Raymond.

13 Q. Let's begin chronologically. From
14 the time period in which Dr. Raymond was writing, are
15 you aware of any other assessments that were done at
16 that time?

17 A. To formally compare FRI and OPC?

18 Q. And contradict Raymond's results.

19 A. I am not aware of any other formal
20 studies done that were evaluated and/or compared with
21 Dr. Raymond's findings.

22 Q. Did the Ministry of Natural
23 Resources -- the date of this report is November, 1974.
24 Did the Ministry of Natural Resources accept Dr.
25 Raymond's assessment at that time?

1 A. They accepted his report. I am not
2 quite sure in what context you are using the word
3 accept. They accepted his report and, therefore, they
4 accepted the analyses that went with that for the area
5 undertaken and for the kind of experiment that was
6 conducted.

7 Q. Did they agree with the quote you
8 placed in the response to the interrogatory; did the
9 Ministry agree with that?

10 A. The quote that the preliminary
11 finding is that the operational cruise -- that if the
12 operational cruise are correct, et cetera?

13 Q. Yes.

14 A. I assume so, I wasn't -- yes, I
15 assume so.

16 Q. Does the Ministry accept Dr.
17 Raymond's assessment today?

18 A. As was described in the second half
19 of the answer to the interrogatory, the second
20 interrogatory in that Question No. 2 that you posed:

21 "Without a formal well laid out designed
22 experiment you are in no position to make
23 such a comparison without some misleading
24 type information."

25 As far as I know, that has never been

1 done with the exception of the hard-to-find five
2 comments that were brought up in the Rosehart Report.
3 And so, to that extent, the Ministry today has no
4 evidence to either corroborate or change that which was
5 stated by Dr. Raymond.

6 Q. Now, in the last sentence of your
7 response - we are speaking still of Exhibit 115 - you
8 state:

9 "There is no single relation between FRI
10 volumes and operational-cruise volumes."

11 Would you agree with me, Dr. Osborn, that
12 if the Ministry cannot relate the two that it cannot,
13 therefore, be certain about volume estimates and,
14 therefore, the Ministry cannot know if it is obtaining
15 a sustained yield on a management unit basis?

16 A. The first part of it: There is no
17 single value that one can quote for the province that
18 says the operational cruise and the FRI differ by "x"
19 per cent. You could produce such a statistic, but to
20 what end, because that statistic will vary.

21 And I spent considerable time and effort
22 describing the FRI and the OPC procedure to point out
23 where that variation may take place.

24 So to turn around and give you a single
25 number, has no meaning. So there is no single number.

1 Now, come back to the second part. You
2 are inferring that because we have an estimate of the
3 FRI and we have an estimate of the OPC and the two
4 differ, that we have no idea of whether we have got
5 sustained yield, if I understood correctly what you
6 were describing.

7 Okay. However, we do have knowledge of
8 what is actually coming off the forest and, in terms of
9 the scaling returns that you asked for, we also have
10 another comparison and the comparison is planned MAD
11 with a volumetric estimate, as described two or three
12 days ago, we do a maximum allowable depletion
13 calculation and for that area we predict an estimate of
14 what the FRI volume is.

15 At the end of the planning period we have
16 a measure of what areas were actually depleted and for
17 that area there is a similar volumetric estimate from
18 the FRI. The two volumes, whether they are both biased
19 or not, are comparable to see whether in fact you have
20 got in actuality in depletions what you set out to do
21 in the plan.

22 Q. Isn't the MAD based on the FRI?
23 Isn't the source of the information that you call two
24 sources in fact the same source, the FRI?

25 A. Oh, yes, and hence because the two

1 sources -- because the one source may or may not have a
2 bias in relation to the true value of what is in
3 Ontario, that comparison is perfectly valid.

4 Q. The point, however, is: What do you
5 know about the accuracy of the FRI and Dr. Raymond says
6 it can be off by up to a third?

7 A. Ah, it does not say that.

8 Q. Let's look at the words.

9 A. The words say that the FRI estimate
10 as opposed to the OPC estimate may differ by up to 30
11 per cent.

12 Q. Isn't the thrust of the report that
13 OPC is more accurate?

14 A. OPC, if done properly and with
15 trained staff, laid out in the correct fashion, with
16 the right number of samples, should be, should be more
17 precise. No hesitancy in so saying, should be.

18 But what we are trying to compare is what
19 is really out there with two estimates. And, in fact,
20 let me take you to Exhibit 93, which is the Rosehart
21 Report, and I will quote from page 1 on Exhibit 93 and
22 on page 1 of Exhibit 93 in the top of the right-hand
23 paragraph. The second line on page 1 at the top on the
24 right, states --

25 THE CHAIRMAN: I think you will have to

1 wait a moment until we find our copy.

2 DR. OSBORN: Exhibit 93.

3 MR. CASTRILLI: Q. Page 1?

4 DR. OSBORN: A. Page 1.

5 Q. Is this what you read -- no, this is
6 not what you read into the record before.

7 A. No, sir, it is not, but I wish to
8 make a quotation here that has relevance to your
9 question.

10 Q. Which paragraph?

11 A. It is on page 1 on the right-hand
12 column, the second line. The sentence starts - and we
13 are referring here to the terms of reference of the
14 Rosehart Committee:

15 "His original terms of reference
16 suggested the Committee should conduct a
17 large-scale experiment to confirm FRI
18 data. Public input suggested that such
19 large-scale confirmation of the FRI was
20 unrealistic. The Committee reached a
21 consensus in and requested the government
22 to formally update his terms of reference
23 on the basis of public input which
24 indicated the Committee's work would be
25 more valuable if its mandate were

1 revised."

2 Now, the inference at that time from the
3 people to whom the Rosehart Committee talked, the input
4 from those people, whoever that public were referred to
5 on page 1, inferred that the conducting of a
6 large-scale experiment, OPC, and comparing it with the
7 FRI - to use the words here - was unrealistic.

8 And that, in a way, as far as I am
9 concerned, tends to confirm my statement that unless
10 you do a very carefully controlled experiment to
11 measure what is there - and the two ways of its
12 estimating, the FRI and the OPC -- in fact, the
13 Chairman asked me when we were going through this: How
14 would I get a real answer of what is out there, and I
15 described it.

16 So the FRI and the OPC are both
17 estimates. Because of the variability of the forest,
18 they are both estimates of what is out there.

19 Q. Are you done with Exhibit 93?

20 A. Yes, sir.

21 Q. Let's come back to Exhibit 116 for a
22 moment. At the top of my page -- or the top of my
23 copy, it is listed as a draft. Was it ever finalized?

24 A. I don't honestly know, and I can
25 explain why I don't know. That particular year, 1974, I

1 wasn't in the Ministry, I happened to be running around
2 Europe. So I do not honestly know whether that draft
3 was ever picked up and was a final document.

4 Q. Can I ask: Who does know? Mr.
5 Armson, you relied on this version of the report in
6 1974?

7 MR. ARMSON: A. Yes, I did.

8 Q. Did you ask at the time if the draft
9 was going to be finalized?

10 A. No.

11 Q. Do you know why it remained a
12 preliminary comparison and was never finalized?

13 A. I have no idea.

14 Q. Was the Ministry of Natural Resources
15 not interested in having a final report on this topic,
16 or wasn't it regarded as important enough, given the
17 conclusions?

18 A. I was not with the Ministry at that
19 time. This was a document I referred to.

20 Q. Now, Dr. Osborn, if Raymond is right,
21 would you agree with me that a result could be that
22 allowable cuts may be substantially overestimated in
23 some regions from this cause alone?

24 DR. OSBORN: A. If the OPC is also
25 right, yes.

1 Q. It seems that a lot of people were
2 relying on the accuracy of Raymond in 1974 and later;
3 would you not agree?

4 A. No. In due respect, Dr. Raymond did
5 an analysis, he did an analysis originally starting off
6 as a particular project to look at what timber may or
7 may not be available in the Algonquin region, which is
8 the original origin of where this analysis started,
9 because this was the beginning days of the formation of
10 what's called the Algonquin Forestry Authority.

11 One of the reasons this study was started
12 was Dr. Raymond was asked to look at what might be the
13 potential wood supply in that area.

14 And, as we have indicated before, in the
15 Algonquin forestry area, because of the nature of the
16 forest, operational cruise data are taken more
17 frequently and have more relevancy.

18 So this is where this project started of
19 Dr. Raymond's. So what he produced was analysis of a
20 certain set of data.

21 Now, to come back to your question: Was
22 his work used in subsequent allowable cut calculations:
23 No.

24 Q. Nobody relied on his assessment and
25 his conclusions; is that right?

1 A. That's correct, as far as I am aware.

2 Q. As far as you are aware. You are of
3 course familiar with Volume I of FLC Reed?

4 Mr. Chairman, I would like to make this
5 the next exhibit.

6 THE CHAIRMAN: 117.

7 MR. CASTRILLI: (handed)

8 THE CHAIRMAN: Thank you.

9 MR. CASTRILLI: Mr. Chairman, I should
10 note that Exhibit 117 is again excerpts from the
11 entirety of the report mainly related to Ontario.

12 THE CHAIRMAN: Thank you.

13 ---EXHIBIT NO. 117: Excerpts of report entitled:
14 Forest Management in Canada by
F.L.C. Reed.

15 MR. CASTRILLI: Q. Page 46, Dr. Osborn.
16 The heading at the bottom of the page on the right-hand
17 side, I am just going to read the -- and over on to
18 page 47, I am just going to read the entirety of that
19 into the record.

20 It begins at page 46:

21 "One of the basic prerequisites for
22 forest management anywhere is an accurate
23 assessment of the inventory. In Ontario,
24 the forest resources inventory, FRI,
25 developed in 1963 has been used as a

1 basis for forest management. Serious
2 reservations have developed on the
3 suitability of the FRI for use in
4 compilation of local management plans."

5 And over on page 47:

6 "Compared to operational cruises, FRI
7 estimates have been found to overestimate
8 volumes by as much as one third. As a
9 result, allowable cuts may be
10 substantially overestimated in some
11 regions from this cause alone."

12 First of all, I think you would agree
13 with me that the reference to one-third appears to be
14 from Raymond. So would you agree with me that Reed
15 relied upon Raymond?

16 DR. OSBORN: A. I will agree that
17 whoever wrote the report for Reed may have been aware
18 of and used Dr. Raymond's report.

19 Q. Mr. Armson, just turn to the
20 acknowledgments page in Exhibit 117.

21 MR. ARMSON: A. Yes.

22 Q. You will note in the second sentence:
23 "Several sub-consultants were heavily
24 involved in the study..."

25 One of them was you. Now, do I

1 understand that comment to mean the special report you
2 did on Englehart?

3 A. That is correct, and a joint paper I
4 authored with Professor Smith on poplar, on hardwood
5 poplar which is also in Volume II of that report.

6 Q. Would you have been involved or
7 reviewed what is Volume I and now Exhibit 117?

8 A. I was involved in many of the
9 preliminary discussions long before anything was
10 written. I was not involved in any of the writing
11 directly in Volume I and, in fact, to the best of my
12 recollection, I saw very little of it.

13 The writing was done in haste at the end
14 by Mr. Reed and two or three of his staff, and at that
15 time I believe the haste was because Dr. Sidney Smith
16 had left the group and there was some considerable
17 problem.

18 I did not in fact review Volume I, if
19 that is your question.

20 Q. But you would agree with me that the
21 reference to one-third must be coming from Raymond?

22 A. It need not come from Raymond. It
23 could have come as someone reading the statement that I
24 made referring to Raymond in my report, because my
25 report was available in June of 1976. That was prior

1 to the year -- one year prior to this report being
2 written.

3 Q. Let me ask you then: Do you agree
4 with the Reed assessment and conclusion that I read
5 into the record?

6 THE CHAIRMAN: Which one are you asking?

7 MR. CASTRILLI: Dr. Osborn I suppose.

8 DR. OSBORN: The statement of: Compared
9 to the operational cruise, FRI estimates have been
10 found to overestimate volumes by as much as one-third,
11 I concur with that based upon the evidence that was
12 given by Dr. Raymond. For some parts of the province,
13 the data analyzed by Dr. Raymond showed that to be
14 true.

15 So that statement that's in the report by
16 FLC Reed is not untrue and if, if the operational
17 cruise was a true estimate of what was out there, then
18 the ensuing statement is true, however --

19 MR. CASTRILLI: Q. Sorry, just so I am
20 clear and the record is clear as to what you mean by
21 the ensuing statement --

22 DR. OSBORN: A. As a result, allowable
23 cuts may be substantially overestimated in some regions
24 from this cause alone.

25 Q. Thank you. Sorry, go ahead with your

1 answer.

2 A. Given that the OPC was "right" and
3 the FRI did, across-the-board, overestimate by 30 per
4 cent, then arithmetically the allowable cut
5 overestimated by 30 per cent, except the allowable cut
6 is done on an area basis. So the 30 per cent volume
7 may or may not be 30 per cent by area.

8 So a word of caution as to what units we
9 are talking of, what we are really talking about. But
10 the premise behind all of this is that the OPC is
11 right.

12 Mr. Chairman, if I could take a moment, I
13 would like to draw a diagram to illustrate the point I
14 am trying to make.

15 THE CHAIRMAN: Any objections?

16 MR. CASTRILLI: I think it is the sort of
17 thing that can be done in re-examination. He has
18 already answered the question.

19 DR. OSBORN: Okay.

20 THE CHAIRMAN: But wouldn't it make more
21 sense to sort of deal with it as one unit while we are
22 going through this at this point?

23 MR. CASTRILLI: I am content to do that,
24 if it is the Chairman's wish.

25 THE CHAIRMAN: Go ahead, Dr. Osborn.

1 DR. OSBORN: We have a forest, it matters
2 little whether we are talking management unit,
3 district, region, it matters little. We have a
4 population of a forest out here, and for that
5 population, for the sake of the discussion, I am
6 concerned about the average. I could just as easily be
7 concerned about the total, but let's make the
8 discussion simple. I am looking at what is the true
9 average out there.

10 The Chairman asked me earlier: How would
11 you get it, you cut down all the trees, measure them et
12 cetera. So what do we do in real life because we won't
13 do what was advocated is we will go out there and take
14 a sample, be it FRI, be it operational cruise. It is a
15 sample.

16 The FRI goes out there and estimates the
17 "x" bar, because it is an estimate, what is the true
18 average. The operational cruise goes out there and
19 estimates its estimate of the true average.

20 Now, as was explained, with the FRI there
21 is a shortfall at the moment but this estimate for the
22 FRI, there is no statistical knowledge of the
23 variability, the estimate of error around the FRI
24 value. A shortcoming, true, accepted. The operational
25 cruise, if done properly, does have an estimate of

1 precision.

2 Now, what we are comparing in Dr.
3 Raymond's report was that the average or total as found
4 by the FRI and the average or total as found by the OPC
5 typically differed by 30 per cent.

6 Given the data were all right and what
7 have you, no hesitancy with that statement, but either
8 of the OPC and the FRI are both sample estimates
9 looking for the true value.

10 What I am trying to point out is that
11 that difference may well be a genuine difference, but
12 what we are really looking for is: How well do these
13 estimates estimate truly what is there, and this is the
14 concern we have got.

15 We have got two estimates being compared.
16 Hence, the Rosehart quote: If you go and do another
17 cruise, you are going to get another estimate. You
18 have got to realize you need some estimate of precision
19 on both these two to know whether they are genuinely
20 different or whether it is a sampling error.

21 And all the time what you are really
22 striving for is how close to real life can I get. You
23 really need to understand that what's concerned is the
24 black line of what is truly the value.

25 The other two, the way modern technology

1 is and what's out there is very good, these are
2 estimates. So, yes, the two estimates may differ and
3 the Rosehart Report again has examples of, yes, the two
4 estimates may differ.

5 MR. MARTEL: And the true value you said
6 is what is out there and how do you attempt to
7 establish that if you have got two estimates? How do
8 you arrive at that middle figure?

9 DR. OSBORN: Okay. Given that we
10 literally can't go and get that true estimate--

11 MR. MARTEL: Right.

12 DR. OSBORN: --then we take an estimate
13 and we take an estimate with a statistical precision -
14 and we talked about the error and all of that, the
15 statistic mumbo jumbo and that let's us calculate a
16 value that says: Hey, 95 per cent of the time I know I
17 am somewhere within those limits and we talked about
18 those limits that we allow.

19 And statistics will let you say: This is
20 why OPC should provide a better answer, because you go
21 out there and you can provide some statistical
22 precision with that estimate that will let you say: I
23 have got a value of 12, but it is plus or minus 2, and
24 that tells you you have really got something between 14
25 and 10, somewhere in that range the true value is.

1 This is the real benefit of having a
2 statistically-precise sample is it let's you tell you,
3 without actually going and measuring everything, that
4 somewhere in that range, without worrying about the
5 probability, somewhere in that range that black line
6 actually exists.

7 Now, the FRI unfortunately doesn't
8 provide you with that measure.

9 THE CHAIRMAN: Was there any estimate by
10 Dr. Raymond as to the statistical accuracy of his OPC
11 data plus or minus whatever?

12 THE OSBORN: No, sir, unfortunately there
13 wasn't, and Dr. Raymond's data did not come from data
14 he personally went and collected. He took, as
15 described in his report, I am not sure about all, but
16 as many available operational cruise records from
17 within the Ministry as he could obtain.

18 He took those records and there is a
19 lengthy discussion of how he had to purge them, to get
20 data that did anything for them, he took those records,
21 but those records at that time did not have associated
22 with them any measure of that variability.

23 Now, it really is unfortunate because it
24 then gives me no clue as to that 30 per cent range as
25 to what it really means.

1 THE CHAIRMAN: So the margin of error in
2 the OPC as taken by the Ministry at that time, not by
3 Dr. Raymond but by whoever took them not using these
4 variability factors, could have been wildly out; is
5 that what you are saying?

6 It could have been out within a range
7 that might have been much more than five per cent; it
8 could have been much larger than that?

9 DR. OSBORN: Yes, sir, it could have
10 been. This is the unfortunate unknown with that
11 analysis. This is really why my comment: You need a
12 very carefully designed properly thought through
13 experiment to do this comparison. It is not that it is
14 not serious, it needs to be carefully thought through.

15 Dr. Raymond's first approximation very
16 valiantly took what he had and compared them just to
17 see what the differences were. And Dr. Raymond, as a
18 biostatistician, knew very well what he was doing in
19 making that comparison, and he knew that he didn't have
20 for the OPC - certainly he knew for the FRI - but for
21 the OPC he didn't have, unfortunately from the data,
22 some measure of the range even around the OPC
23 estimates, so...

24 THE CHAIRMAN: Did he state that anywhere
25 in the report, do you know?

1 DR. OSBORN: That I am not sure, sir. I
2 am going from -- like, I worked many years with Dr.
3 Raymond so it's from firsthand knowledge of knowing his
4 background and the fact that he was a biomathematician.

5 MR. MARTEL: Do you have any idea of how
6 many cruises we are talking about, we are going back to
7 '76 -- or '74, I guess?

8 DR. OSBORN: Dr. Raymond lists in Exhibit
9 116, sir, in the back on pages starting -- on page 41
10 there is a list of the operational cruise files that he
11 looked at. So that is the first approximation of how
12 many management units did he cover.

13 And then in the ensuing back pages we
14 literally have a list of, working group by working
15 group, the number of stands actually from which samples
16 were taken and their area.

17 So in the back of the report was
18 literally a list of the areas visited, the areas for
19 which data had been collected, due to operational
20 cruise data. So literally management unit by
21 management unit, the number of stands, there is a
22 write-up in Dr. Raymond's Report of where those data
23 came from.

24 THE CHAIRMAN: Dr. Osborn, say, if you
25 take Table 2 at the back of that report, it has got a

1 designation at the bottom small b: magnitude indicates
2 possible error. What does that mean?

3 DR. OSBORN: I think, sir, that will
4 indicate that in the data themselves -- Dr. Raymond had
5 enormous difficulty - again for reasons I am not going
6 to bother the Board with - in taking these computerized
7 data and trying to make sense out of them, in all
8 honesty.

9 And I think the reference there, the
10 possible error, is in the data of the FRI. There was
11 something in the computation that gave rise to a value
12 that didn't make sense to Dr. Raymond with his
13 knowledge of what Ontario was about. So he flags it:
14 Hey, I think this number is a little bit obscure.

15 But Table 2 again shows for the units,
16 for the number of stands cruised, the range in how
17 these values do differ. It was a very, very useful
18 piece of work. It went as far as it could go at that
19 time.

20 THE CHAIRMAN: All right. Do you want to
21 mark your sketch as an exhibit, please. Exhibit 118.

22 MR. CASTRILLI: What should we call it?

23 THE CHAIRMAN: I have just got sketch by
24 Dr. Osborn re: comparison between FRI and OPC.

25 ---EXHIBIT NO. 118: Hand-drawn sketch by Dr. Osborn

1 depicting comparison between FRI
2 and OPC.

3 THE OSBORN: So still on that subject,
4 sir, on page 27 of Dr. Raymond's report --

5 MR. CASTRILLI: Q. Excuse me, Dr.
6 Osborn, is this in aid of the answer to my question or
7 is this examination-in-chief again?

8 DR. OSBORN: A. I was trying to explain
9 that the estimate that was made by Dr. Raymond, which
10 indicated on average a 30 per cent difference between
11 operational cruise and FRI, that conclusion, perfectly
12 correct in the analysis Dr. Raymond did, trying to
13 explain the environment in which that was put together
14 and in which that statement makes sense.

15 So the environment in which that analysis
16 was done and the understanding of the author in making
17 that statement to try and make sure that that is
18 understood so that the idea that the FRI and the OPC
19 differ by 30 per cent, is taken with a surround on what
20 that really means and where did that come from.

21 THE CHAIRMAN: And, in fairness, Mr.
22 Castrilli, the Board did ask Dr. Osborn whether there
23 was anything in the report to indicate that there was a
24 margin of error in these estimates.

25 Are you going to be dealing with that

1 with what you want to refer to now?

2 DR. OSBORN: I am just going to make a
3 reference to what Dr. Raymond himself, when he did this
4 analysis, observed which has relevancy to where it is
5 going to be taken or what might come out of this.

6 And on page 27, the first full paragraph
7 states:

8 "One difficulty is that our present
9 system does not permit determination of
10 how good the inventory and operational
11 cruise sampling is."

12 And in the ensuing statement goes on to
13 say:

14 "You could do that through a massive
15 reassessment and multiple remeasurement."

16 So Dr. Raymond himself, quite familiar
17 with the FRI procedures, quite familiar with the OPC
18 procedures recognized that to obtain that true analysis
19 was going to require considerable effort and a careful
20 thinking through of how best to do it.

21 MR. CASTRILLI: Q. Dr. Osborn, if I
22 could ask you something about Exhibit 118. You have a
23 vertical line cross-hatched with a horizontal line and
24 you have put in the centre true value.

25 A. Yes.

1 Q. On the left-hand side of Exhibit 118
2 you have put a red dot. On the right-hand side of
3 the -- and the red dot on the left-hand side of the
4 page refers to the FRI estimate; is that right?

5 A. The left-hand dot does, yes.

6 Q. And on the right-hand side of Exhibit
7 118 you have put a second red dot and you have
8 indicated the OPC estimate?

9 A. Correct.

10 Q. From the naked eye it appears that
11 you have made them equi-distant from the true value.
12 Is it your testimony that the FRI and OPC are equally
13 off, or would the OPC be closer to the true value than
14 the FRI?

15 A. First question. There is no
16 inference in here in trying to make it equi-distant.

17 There is no suggestion, no deliberate
18 suggestion in the diagram of making the two estimates
19 equi-distant from the true value.

20 In answer to the second question: I
21 would hope, given the time and money and effort spent,
22 that the operational cruise estimate was closer to the
23 true value than the FRI, I would hope.

24 Given it is done properly, the OPC will
25 certainly provide a more precise estimate. I could

1 have drawn the red dots both the same side. The point
2 I was trying to make is they are both estimates, the
3 comparison needs to know the precision of both to make
4 a true comparison which, unfortunately, was not
5 available to Dr. Raymond in 1974.

6 MR. CASTRILLI: Mr. Chairman, I have
7 forgotten when we began. If I could just have some
8 guidance from you as to when you intend to have the
9 mid-afternoon break so I can gauge my cross-examination
10 accordingly.

11 THE CHAIRMAN: Well, why don't we take a
12 15-minute break at this time and then come back for
13 perhaps -- until 5:30 and then break for the day.

14 ---Recess at 4:10 p.m.

15 ---Upon resuming at 4:35 p.m.

16 THE CHAIRMAN: Thank you.

17 MR. CASTRILLI: Q. Mr. Armson, if I
18 might begin with you. The comment you made over the
19 break, you indicated that with respect to the FLC Reed
20 Report that it might have been written in haste.

21 Was that your comment?

22 MR. ARMSON: A. If I just -- my
23 recollection was that being involved in that study,
24 that the gentleman, Dr. Sydney Smith, who is named in
25 the forward, left the project in the spring, I believe,

1 of 1977 and there was some considerable -- because he
2 was the key person, that the report was written by, as
3 I recall, Mr. Reed and one or two of his staff.

4 The point was that I was involved through
5 the piece and the writing to meet the deadline was, I
6 believe, a rather hurried one. I am not in any way
7 suggesting that that affected the quality of the
8 report, just that in fact it was...

9 Q. I am sorry, I can't hear you.

10 A. I am not suggesting in any way that
11 the rapidity with which the report was written in any
12 way is reflected in the report itself.

13 Q. I was wondering, did you mean your
14 comment to be taken in relation to Reed's apparent
15 reliance on Dr. Raymond's comment about FRI volumes
16 overestimating the stand volume by one-third when
17 compared to OPC?

18 A. In the words in the FLC Reed Report,
19 which I believe is exhibit...

20 THE CHAIRMAN: 117.

21 MR. ARMSON: ...117, and I believe the
22 reference was to the words on the top of page 47.
23 There is no source for that -- those words. They could
24 have come from the Raymond Report but, as I noted, it
25 may be that the writers in fact had read my report and

1 took the information.

2 THE CHAIRMAN: Well, ultimately the
3 ultimate source was the Raymond Report?

4 MR. ARMSON: That is where I would
5 presume it came from.

6 MR. CASTRILLI: Q. So it is possible --
7 your testimony is, it is possible he relied on your
8 comments in your report, or he could have read the
9 Raymond Report directly?

10 MR. ARMSON: A. That is correct, either
11 one, and I can't attest to which one.

12 Q. And, of course, if we look at your
13 report, which is in Exhibit 53, page 160, you note at
14 the top of that page, the first full sentence on that
15 page --

16 MR. CASTRILLI: Mr. Chairman, Exhibit 53
17 would be the Panel 2 evidence.

18 THE CHAIRMAN: Panel 2 evidence.

19 DR. OSBORN: Page 160 of the panel.

20 MR. CASTRILLI: Page 160 of the Panel 2
21 evidence.

22 THE CHAIRMAN: Very good.

23 MR. CASTRILLI: Thank you.

24 THE CHAIRMAN: All right.

25 MR. ARMSON: Yes, I have page 160.

1 MR. CASTRILLI: Q. Yes, on that page you
2 note in the first sentence -- the first two full
3 sentences on that page:

4 "A number of comparisons have been made
5 of volumes determined for the same areas
6 by FRI and operational cruising and the
7 assumption is that the volume estimates
8 from the latter are more likely to be
9 correct."

10 And then you note the Raymond reference
11 as having concluded that FRI overestimates volumes by
12 one-third when compared to operational-cruise values.

13 And I believe you indicated that that was
14 Dr. Raymond's conclusion and not necessarily your
15 opinion; is that right?

16 MR. ARMSON: A. That is correct.

17 Q. Page 158 of the same volume, the
18 first full paragraph on that page, you note:

19 "In my deliberations...."

20 A. Yes.

21 Q. "...I have drawn heavily upon two
22 internal reports."

23 A. Yes, I see that.

24 Q. There is a reference one and a
25 reference two.

1 A. That is correct.

2 Q. The second reference on that page is
3 to Raymond's report.

4 A. That is right.

5 Q. So it is possible the reliance from
6 FLC Reed, if he never read Raymond's report, could have
7 been to your report and your heavy reliance on Raymond;
8 is that right?

9 A. It could have been, yes.

10 Q. Now, did the -- or did the Raymond
11 report raise sufficient interest in the Ministry to
12 justify the completion of his work and to verify his
13 preliminary comparison?

14 A. As I remarked earlier to the Board,
15 in answer to that question, I have no knowledge and did
16 not discuss the implementation of the recommendations
17 in the Raymond Report with the Ministry staff during
18 the period of 1975 and '76.

19 MR. CASTRILLI: Mr. Freidin, can you
20 advise whether that information is available?

21 MR. FREIDIN: My understanding is that
22 that information is not available as to why -- if I
23 understand your question, as to why the report wasn't
24 finalized?

25 MR. CASTRILLI: Well, it was really two

1 questions. Why the report was not finalized and,
2 secondly, what did the Ministry -- well, why was the
3 report not finalized, let's just keep it to that.

4 MR. FREIDIN: My notes -- I would be
5 going to the two people sitting there probably and
6 asking them.

7 MR. CASTRILLI: And they don't know?

8 DR. OSBORN: I can only go from inference
9 from working with Dr. Raymond in a variety of projects.
10 Dr. Raymond was -- with a research background, he had
11 previously been in Forestry Research Branch, and at the
12 time he was then in what was called Policy Research
13 Branch, but it was his research background.

14 Dr. Raymond, as was typical of a
15 scientist, would take the analyses that he had done or
16 any of the work that he had done and would write up the
17 analysis into a report which would turn up into an
18 internal memo or internal report, be it draft or be it
19 final.

20 This was sort of a modis operandi for
21 Dr. Raymond to work under. He would produce a
22 document, as he has done with other documents, and they
23 would be internal - either drafts and/or completed
24 reports, and whether anybody picked up and ran with any
25 of them, really was a function of priorities.

1 MR. CASTRILLI: Q. That one was not
2 regarded as a priority as far as we can tell; is that a
3 fair inference?

4 DR. OSBORN: A. Yes, given what happened
5 in '75, '76, '77, '78, et cetera, certainly.

6 THE CHAIRMAN: Mr. Castrilli, how do you
7 know that this is a preliminary report as opposed to a
8 preliminary comparison of these two different methods
9 of estimating volume?

10 MR. CASTRILLI: Mr. Chairman -- sorry.

11 THE CHAIRMAN: I mean, just looking at
12 the -- are you going on something...

13 MR. CASTRILLI: It also says draft at the
14 top right-hand side of the page. I don't know if that
15 has been photocopied on yours.

16 THE CHAIRMAN: I am sorry, mine is sort
17 of obliterated. I did not see that, I am sorry.

18 MR. CASTRILLI: Q. Dr. Osborn, can you
19 advise what changes in FRI procedures the Ministry made
20 to assure greater accuracy in volume estimates to
21 correct the problem that Raymond identified of FRI
22 overestimation of volume by one-third compared to the
23 values from operational cruises?

24 DR. OSBORN: A. I can describe the
25 procedures the FRI -- how the FRI changed to try and

1 ensure that the FRI was a better representation of what
2 the true value of the forest was.

3 Q. Well, that is not what I had in mind.

4 A. No, I know it is not, but because
5 there wasn't any work done between the FRI and the
6 OPC...

7 THE CHAIRMAN: Well, Dr. Osborn, it is
8 Mr. Castrilli's cross-examination.

9 DR. OSBORN: I am sorry, sir. I
10 apologize.

11 MR. CASTRILLI: Q. Let me shorten this
12 up. I will refer you to the next interrogatory in the
13 series. (handed) Question 7 on Panel 3.

14 MR. CASTRILLI: Mr. Chairman, I ask this
15 be made the next exhibit.

16 THE CHAIRMAN: Exhibit 119.

17 ---EXHIBIT NO. 119: Response by MNR to Interrogatory
18 No. 7 posed to Panel 3 from CELA.

19 MR. CASTRILLI: Mr. Chairman, just for
20 the record, Exhibit 119 has been characterized as
21 Question 7. It actually was a question asked by us
22 with respect to Panel 2, and so the reference to page
23 160 is to the Panel 2 evidence or Exhibit 53.

24 Q. Now, Dr. Osborn, the question I asked
25 you a moment ago is the same question that appears in

1 Exhibit 119, and the reason why I didn't want you to go
2 into a dissertation was because the answer you gave in
3 the interrogatory was:

4 "None of the changes in FRI procedures
5 are directed specifically to the issues
6 raised by Raymond."

7 Is that right?

8 DR. OSBORN: A. Correct, which is what I
9 inferred just a moment ago.

10 Q. Can I ask why not?

11 A. Because, as I explained a moment ago,
12 the procedures that were changed in the FRI was an
13 effort to make the FRI a more useful estimate of what
14 was really out there.

15 Q. Wouldn't you do that by improving the
16 capability generally of the Ministry to estimate what
17 is out there, not necessarily the FRI if the FRI is not
18 the way to do it?

19 A. Ah, but the FRI is the way to do it
20 for the unit as a whole which is the data required for
21 the management planning.

22 Q. Notwithstanding the differential
23 between the OPC and the FRI?

24 A. And given that the OPC is used for a
25 very small part of the unit for a specific short-term

1 period, and we have been through the explanation of
2 when do the two get used and where do the two fit
3 together and, in answering your question, or partly,
4 what was done with the FRI to try and make it more
5 useful -- and you were asking with relevance to the
6 OPC.

7 Q. Yes, that's right.

8 A. One of the things that, in fact, have
9 been done in the FRI is to have much greater
10 co-ordination with the field. As described in the FRI
11 process, there is much more dialogue with field
12 foresters as to the available data that may be used as
13 input into the FRI.

14 One of those pieces of data have been to
15 check with the field as to whether or not OPC data
16 exists that can be used for interpretation of part of
17 the area as an aid for that part of the FRI. And I
18 even believe I cited an example that is going this very
19 year in the Algonquin region where, in the FRI for the
20 Algonquin region, half approximately of the FRI data
21 will come from operational cruising.

22 Q. And so why wasn't that in the answer
23 to the interrogatory?

24 A. Because that wasn't the question that
25 was asked. The question that was asked is: What has

1 been done in the FRI in comparison with the problems
2 identified by Dr. Raymond.

3 Dr. Raymond identified problems comparing
4 the FRI and the OPC, that comparison. The question
5 that was asked was: What have we been doing to improve
6 that comparison.

7 Q. And the answer is nothing?

8 A. And the answer was nothing because
9 what we have been trying to do is improve the FRI.
10 Whether or not the OPC gets improved as well is another
11 question, but it wasn't the question asked in the
12 interrogatory.

13 Q. Well, the question was, with respect,
14 have efforts been made to assure greater accuracy in
15 volume estimates.

16 A. With regards what Dr. Raymond said
17 with comparison with the operational cruising.

18 Q. He wants more accurate volume
19 estimates period; doesn't he? I mean that is the
20 inference to be drawn from the summary we see of
21 Raymond's Report in Mr. Armson's Report?

22 A. Okay.

23 Q. We are not talking about producing
24 estimates in the air for no purpose, we are doing it
25 for the purposes of improving volume estimates on the

1 ground.

2 And your answer was nothing in relation
3 to Raymond's concern; is that correct?

4 A. That is the correct answer to the
5 question that was posed.

6 Q. Thank you. Now, earlier today, I
7 believe it was today, you indicated -- no, I guess it
8 was not today, earlier today you did refer to the
9 Rosehart Report which is Exhibit 93.

10 Page 10, the bottom right-hand side of
11 the page, the last paragraph, the reference -- or the
12 paragraph reads:

13 "These results..."

14 And what the Rosehart Committee is doing
15 is comparing what is found in Table 2 on that page:

16 "...indicate that for township and larger
17 areas the FRI differs in an absolute
18 sense by about 20 per cent when compared
19 against the OPC survey results. Such
20 accuracy is acceptable for broad
21 macro..." excuse me, "...macro planning
22 purposes but not for detailed operational
23 planning."

24 Do you agree with that conclusion?

25 A. Based upon the five pieces of data

1 that were collected by the Rosehart Report, that is a
2 valid conclusion.

3 Q. Can you advise the Board what
4 studies, in addition to the Rosehart Committee, have
5 been conducted by the Ministry to evaluate the
6 reliability of the FRI since Mr. Armson's report?

7 A. This, I believe, was another
8 interrogatory that you posed.

9 Q. That's right, exhibit 115.

10 A. And I stated on the interrogatory, to
11 the best of my knowledge, none.

12 MR. FREIDIN: What was the number of that
13 again?

14 DR. OSBORN: 115.

15 MR. CASTRILLI: Yes, Exhibit 115 is that
16 interrogatory, it is already in evidence.

17 It is Item 3 on the page referring to
18 your paragraph 34, and the question is the question I
19 asked earlier and the answer was, as you have
20 indicated, none.

21 Q. Now, I believe you actually began to
22 deal with this matter before the break in response to a
23 question from the Board.

24 The Rosehart Committee conclusion was
25 made on the basis of the surveys that are outlined on

1 page 10, or it was summarized I guess on page 10.

2 And would you agree with me that Raymond
3 compared thousands of stands across the province on
4 many management units to come up with this figure of 33
5 per cent?

6 DR. OSBORN: A. Yes, the data are listed
7 in the back of Dr. Raymond's report as to which
8 management units were looked at and the number of
9 stands that were looked at in each unit. That data are
10 all listed in the back of Dr. Raymond's report.

11 Q. Would you agree with me that the
12 number of stands reviewed by Dr. Raymond
13 substantially -- are substantially greater than the
14 number of stands reviewed by Rosehart?

15 A. Yes, looking at the last but one page
16 of Dr. Raymond's report, if I read it correctly, the
17 total area that was looked at for sampling was just
18 about a million acres. That is the value in the back
19 of not last but one page of Dr. Raymond's report, the
20 area cruised was a million acres.

21 Q. Because, Dr. Osborn, for the record
22 you should just indicate the page you are referring to?

23 A. That's page 56.

24 Q. Sorry, that will be table...

25 A. Table 14.

1 Q. Table 14?

2 A. Table 14 of Exhibit 116.

3 Q. There are a number of acres cruised.

4 If we look through Exhibit, I believe it is 116, the
5 Raymond Report and we looked at, say, Table 13, you see
6 he looked at approximately -- or stands cruised were
7 approximately 747 - actually, exactly 747.

8 In Table 12 at page 54 of Exhibit 116,
9 1,735 stands were cruised; if we look at Table 11, 211
10 stands were cruised; Table 10, 107 stands were cruised;
11 Table 9, 781 stands were cruised; Table 8, 300 stands
12 were cruised, so on and so forth.

13 Would you agree that Dr. Raymond's review
14 of stands was quite extensive in this province; was it
15 not?

16 A. Oh, yes.

17 Q. Would you agree with me that in
18 comparison to the few surveys reported on by the
19 Rosehart Committee that there is any particular reason
20 to doubt Dr. Raymond's conclusion of a 33 per cent
21 differential and instead accept the Rosehart
22 Committee's comments and conclusion that it is a 20 per
23 cent difference?

24 A. Dr. Raymond's data were collected --
25 the data that were used in Dr. Raymond's analysis were

1 collected in the 1960s and early 1970s, for the
2 analysis that was done in 1974.

3 And a comparison, based upon the data
4 collected at that time period, indicates through
5 analysis that difference of up 30 per cent.

6 The data collected in the Rosehart Report
7 that is cited in the Rosehart Report covers a more
8 recent time horizon, as it evidenced I believe on page
9 40 of Exhibit 93. And on page 40, there are a little
10 bit more details as to when some of these comparisons
11 were taken.

12 For example, the first one on page 40,
13 the one that was done at Smooth Rock Falls, Abitibi
14 Price's licence, the test was done in 1982. That's the
15 date of the author's publication of that comparison.

16 The data that was given for Sudbury
17 District on page 40, the data were actually produced
18 according to this in 1986. So the comparisons in Dr.
19 Rosehart's Report, the examples that he cites are
20 certainly done in different time frames from that which
21 was done by Dr. Raymond.

22 Q. Dr. Rosehart's are more recent but
23 less extensive; is that right?

24 A. That's correct.

25 Q. Would you also agree with me, Dr.

1 Osborn, that the Rosehart Committee did not show the
2 amount or range of variation that may be expected for a
3 stand?

4 A. They certainly didn't show it in the
5 report.

6 Q. Is there any place else they could
7 show it?

8 A. Well, the reason I hesitate is they
9 were -- they collected the reports that they presented
10 some summary of on pages 40 and 41 in Exhibit 93.

11 Now, I do not know because I have not
12 seen whether the individual five reports that they cite
13 had more details, more statistics than those which are
14 shown on pages 40 and 41.

15 So when we come to the first one, the one
16 that was done on Smooth Rock Falls, how the data were
17 compiled, collected, what sort of statistics were
18 available for them, I do not know.

19 All I see on page 40 is in fact some
20 summary data that came from that study. Hence my
21 answer to your question.

22 Q. I am just noticing the -- I look at
23 the fourth study, Nipigon/White Water is based on 16
24 stands.

25 Now, would it be fair to say, Dr. Osborn,

1 that the variation would probably be considerably
2 larger if the average for a township is approximately
3 20 per cent as is stated at page 10?

4 THE CHAIRMAN: As compared to what?

5 MR. CASTRILLI: Q. In other words, what
6 the range would be would obviously be somewhere between
7 "x" and "y" with 20 being somewhere in there. We don't
8 know what the range of variation was.

9 Is that a fair inference?

10 DR. OSBORN: A. Yes.

11 Q. I would like to refer you to
12 Recommendation 12 at page -- which is on the bottom of
13 page 14, excuse me, of Exhibit 93.

14 The recommendation there of the Committee
15 is that:

16 "The Ministry of Natural Resources
17 seriously explore the option of changing
18 the FRI ground survey design to one based
19 on a network of permanent sample plots
20 distributed throughout the province."

21 And on the top of page 15, seven lines
22 down, the Committee indicates that such a system can
23 provide valuable inventory data.

24 Would you agree with me that permanent
25 sample plots are usually established to obtain

1 estimates of growth?

2 A. Usually.

3 Q. They are usually -- and would you
4 also agree that they are not usually established to
5 provide the inventory?

6 A. No.

7 Q. Sorry, is your answer you agree with
8 that?

9 A. No, I did not agree with that.

10 Q. I think perhaps I am not
11 understanding your answer because I am not
12 understanding the manner in which you are responding.

13 THE CHAIRMAN: I think he is saying that
14 they are not usually established to provide inventory
15 data.

16 MR. CASTRILLI: That's what I thought.

17 DR. OSBORN: No, that wasn't what I
18 meant. That wasn't what the question was, sir, in due
19 respect.

20 THE CHAIRMAN: Oh.

21 DR. OSBORN: Permanent sample plots are
22 typically a method of deriving inventory data for a
23 particular inventory scheme, and the question preceding
24 that was: Were permanent sample plots used to estimate
25 growth, for which the answer is yes.

1 Also --

2 MR. CASTRILLI: Q. Sorry, let me ask the
3 question this way, it might clear the record. Would
4 you agree with me that permanent sample plots can be
5 tied into an inventory, but they cannot be the
6 inventory itself?

7 DR. OSBORN: A. Well, within many parts
8 of the United States they are the inventory itself.
9 There is a system of inventory that is based upon
10 permanent sample plots, the system is called continuous
11 forest inventory, it is a system that got brought from
12 Europe and I have made reference to it in the text.
13 The basis of that inventory scheme is permanent sample
14 plots.

15 Q. So the recommendation is that we
16 establish that in Ontario and that would become the
17 inventory?

18 A. The recommendation is that we
19 seriously explore the option of changing the ground
20 design; instead of using temporary plots, as was
21 described in the existing FRI, to use permanent sample
22 plots.

23 Now, for the data that come from that
24 scheme, they would be an aid into the producing the
25 forest resources inventory, an aid not the whole story.

1 Q. That's the question I asked.

2 A. Yes, it is an aid.

3 Q. Thank you. But that doesn't mean
4 that it is the inventory?

5 A. Okay. It can be the inventory. The
6 continuous forestry inventory scheme uses the permanent
7 sample plot data absolutely with nothing else as the
8 basis for the inventory.

9 Several United States states use this
10 scheme.

11 THE CHAIRMAN: But that is not what
12 Rosehart is recommending for Canada?

13 DR. OSBORN: I don't think so, sir. But,
14 again, I have to read between the lines exactly where
15 he is coming from. I don't think so.

16 MR. CASTRILLI: That's fine, thank you.

17 Q. So that what Dr. Rosehart is
18 recommending would not be a substitute for inventory?

19 THE OSBORN: A. I don't believe so. You
20 will miss one complete piece of the story in Ontario if
21 you just use the permanent sample plots.

22 Q. Fine, thank you. If we can turn to
23 paragraph 34 of Exhibit 78, your evidence.

24 Now, Dr. Osborn, at that page in that
25 paragraph you are referring, among other things, to the

1 definition of protection forest and the fact that it
2 has changed from the manual, the manual being Document
3 21 in your evidence.

4 As I understand the definition, it
5 appears at page 158 -- excuse me, the old definition,
6 it appears at page 158 of your evidence?

7 A. Correct.

8 Q. And the definition as it appeared at
9 that -- as it was at that time established a definition
10 of protection forest as meaning:

11 "Managed primarily to exert beneficial
12 influence on soil, water, landscape or
13 for any other purpose when the production
14 of merchantable timber, if any, is
15 incidental."

16 Now, if I understand the classification
17 correctly, it is site class 4 that became protection
18 forest?

19 A. The classification today, protection
20 forest, includes site class 4.

21 Q. And site class 4 is the worst of the
22 five site classes?

23 A. Correct.

24 Q. And what it means essentially is if
25 it could not grow trees it was classified as a

1 protection forest?

2 A. As was described, site class 4 is
3 based on height over age, and if the height of the
4 trees for a certain age was below the lower limit of
5 site class 3, it was site class 4. So the trees
6 weren't growing very well.

7 Q. Right. At page 3 of Exhibit 79, you
8 refer to it as poor growth. Exhibit 79 is the
9 amendments to your evidence.

10 A. Sorry. Yes.

11 Q. So that my understanding of the new
12 definition is, if an area cannot be harvested or if
13 there is poor growth, it is a protection forest; is
14 that correct?

15 A. The protection forest is site class
16 4. There is no connotation about harvest in that
17 statement in the FRI definition. The FRI says if the
18 area, height and age show site class 4 it is labeled
19 protection forest.

20 Q. Are you telling me then we can cut in
21 site class 4?

22 A. On page 4 of Exhibit 79 --

23 MR. FREIDIN: Are you referring to the
24 the numbers on the right-hand corner of the document?

25 DR. OSBORN: Yes.

1 MR. CASTRILLI: I think that's the only
2 way you can do it.

3 DR. OSBORN: Yes. The typed page No. 4.

4 MR. CASTRILLI: Sorry, I want to be sure
5 the Board is with us.

6 Mr. Chairman, Exhibit 79 is the
7 amendments which were filed by Mr. Freidin I believe on
8 the first morning of this panel's evidence.

9 MR. FREIDIN: The first page is a letter
10 with our letterhead...

11 MR. CASTRILLI: That's right.

12 Q. Dr. Osborn you were referring to page
13 4.

14 DR. OSBORN: A. On page 4 of Exhibit 79,
15 the typed page 4, the last paragraph starts:

16 "Timber management operations may also be
17 planned and implemented on protection
18 forest lands."

19 And it goes on to make some other
20 comments as to what those operations may or may not be.
21 And at the bottom of that particular paragraph on page
22 4 it says:

23 "Decisions on operations on those lands
24 are also made during the timber
25 management planning process and prior to

1 the implementation of operations."

2 So when you asked about operations on
3 site class 4, this document speaks partially to that
4 question you asked.

5 THE CHAIRMAN: I think his question was
6 cutting. Is that one of the activities that you are
7 talking about there in operations, or are you talking
8 about other ones?

9 DR. OSBORN: Okay. Here I am not sure,
10 sir, exactly whether in fact cutting is or is not
11 allowed on site class 4. Such a decision is made at
12 the timber management planning time. I was looking for
13 words if they existed, that's all.

14 MR. CASTRILLI: Q. I am wondering, Dr.
15 Osborn, could you simply -- since you don't know, could
16 you simply confirm whether in fact timber management
17 planning operations as stated on page 4 is meant to
18 include harvesting?

19 MR. OSBORN: A. Can do.

20 Q. Thank you.

21 MR. FREIDIN: Mr. Chairman, I can advise
22 at the present time that all timber management
23 activities could occur on protection if that forest is
24 classified as protection forest.

25 MR. CASTRILLI: Thank you.

1 If I can have your indulgence for a
2 moment, Mr. Chairman, I just want to find the correct
3 exhibit.

4 Q. Exhibit 112, Dr. Osborn, the 1977
5 Forest Management Plan.

6 THE CHAIRMAN: Sorry, what exhibit
7 number?

8 MR. CASTRILLI: Exhibit 112. It is the
9 green document I filed earlier today.

10 Q. Dr. Osborn, this is the Forest
11 Management Plan Manual predecessor to the 1980 and the
12 1986 Timber Management Planning Manual; is that
13 correct?

14 DR. OSBORN: A. That's correct.

15 Q. Can I refer you to page 53 of Exhibit
16 112. About halfway down the page is a definition for
17 protection forest?

18 A. Yes, sir.

19 Q. It is defined in this document as:
20 "An area wholly or partially covered with
21 woody growth managed primarily to
22 regulate stream flow, prevent erosion,
23 hold shifting sand, or exert any other
24 beneficial influence."

25 Would that still substantially fall into

1 the category of protection forest today?

2 A. Not as classified by the forest
3 resources inventory.

4 Q. Where would such land now be
5 classified?

6 A. Within the forest resources
7 inventory, it would not be there at all because the
8 forest resources inventory describes what is found out
9 there according to the classification I went through.

10 Now, I hesitate because it is possible
11 that the consideration for some part, all of those
12 concerns voiced on page 53 may end up in some part of
13 the management planning area and areas of concern.

14 Q. And that is going to be dealt with in
15 which panel?

16 Mr. Freidin, can you assist?

17 MR. FREIDIN: 15.

18 THE CHAIRMAN: How long is 15 going to
19 take, do you think, in months?

20 MR. FREIDIN: We might very well split 15
21 into a number of panels.

22 THE CHAIRMAN: Oh, no, no. Mr. Freidin,
23 you told us at the beginning 20 and I think we heard
24 indication it might be up as high as 22, and if you are
25 taking 15 and dividing it into another 15 panels or

1 something, we will never even come close to the end of
2 your case.

3 MR. FREIDIN: We will, I assure you.

4 THE CHAIRMAN: Okay.

5 MR. MARTEL: I am wondering...

6 MR. CASTRILLI: I was going to ask him:
7 did he mean on a human or a geological time scale.

8 THE CHAIRMAN: Well, as all things in
9 the forest pass on, so will we all.

10 Sorry, Mr. Castrilli.

11 MR. CASTRILLI: Q. Dr. Osborn, just so I
12 am clear on your testimony then, the definition defined
13 in Exhibit 112 of protection forest and your
14 understanding now is that it most likely would fall
15 into what will be known as areas of concern.

16 DR. OSBORN: A. As I indicated, if I was
17 to go look for areas where that sort of purposes of
18 management and concerns may be exhibited, right today,
19 that is where I would go and look. And, as I
20 mentioned, that comes after the forest resource
21 inventory has been put together.

22 That is a managerial concern and what I
23 tried to exhibit in the forest resources inventory is
24 the inventory is a picture of what is there, without
25 necessarily managerial implications. The inventory is

1 supposed to be: I will describe what is there for you
2 and the manager then takes that and manages as they see
3 fit, according to the objectives and the conditions.

4 The inventory doesn't try to presuppose
5 management.

6 Q. Protection forests have become site
7 class 4; is that right?

8 A. Site class 4 is a piece, but not the
9 entire protection forest classification. It is the
10 predominant piece.

11 Q. I understand the other part of it
12 would be islands under 40 hectares?

13 A. Correct.

14 Q. Could you advise the Board why the
15 definition was changed?

16 A. Yes, because both Exhibit 112's
17 definition and perhaps more logically the words that
18 were stated on page 158 of the panel statement which
19 was in the FRI booklet itself, which Mr. Castrilli
20 quoted.

21 Having those words in there, and having
22 the FRI process not classify lands in that fashion,
23 gave rise to confusion. And, in essence, to try and
24 clarify -- to try and reduce the confusion, the
25 definition was changed to that FRI procedure that was

1 then being practised; namely, protection forest
2 included lands that were classified as site class 4 and
3 the islands.

4 So to try and literally take away from
5 that apparent confusion, discrepancy, ambiguity, we
6 just made a simple statement that: Hey, site class 4
7 was a piece of protection forest as were islands of
8 this size.

9 Q. And am I correct -- maybe you can
10 just confirm for me, the definition of site class 4
11 appears where in your evidence.

12 A. On page 31 of the panel evidence, at
13 paragraph 56, is a description of the site classes and
14 in Exhibit Document 29, which is on page 185, of the
15 panel evidence.

16 Q. Sorry, that was page 185?

17 A. 185 which describe the components, it
18 indicated where site class 4 went in terms of
19 protection forest.

20 So the text describing site class says
21 there is x, 1, 2, 3, 4, x being the best and the
22 text -- and the Document 185 states site class 4 is in
23 protection forest.

24 Perhaps what is not stated on 185 is X,
25 1, 2 and 3 are in production forest.

1 MR. CASTRILLI: Mr. Chairman, this would
2 be a reasonable place to break for the day, in light of
3 what is coming next.

4 THE CHAIRMAN: We need the extra ten
5 minutes to prepare for tomorrow, I suppose.

6 Very well. We will adjourn at this time
7 until 8:30 tomorrow morning.

8 Thank you.

9 ---Whereupon the hearing adjourned at 5:20 p.m., to
10 reconvene, Thursday, July 7th, 1988, commencing at
8:30 a.m.

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